# INTEGRATING MEDICAL SURVEILLANCE INTO THE MISSION OF THE MEDICAL DETACHMENT (PREVENTIVE MEDICINE)

A thesis presented to the Faculty of the U.S. Army Command and General Staff College in partial fulfillment of the requirements for the degree

MASTER OF MILITARY ART AND SCIENCE
General Studies

by

TIMOTHY G. BOSETTI, MAJ, USA
B.S., Virginia Military Institute, Lexington, Virginia, 1990
M.S., University of Texas at Austin, Austin, Texas, 1997

Fort Leavenworth, Kansas
2002

MASTER OF MILITARY ART AND SCIENCE

THESIS APPROVAL PAGE

Name of Candidate: Major Timothy G. Bosetti

Thesis Title: Integrating Medical Surveillance into the Mission of the Medical Detachment (Preventive Medicine)

Approved by:

_____, Thesis Committee Chair
Robert F. Baumann, Ph.D.

_____, Member
MAJ Joey S. Wyte, M.A.

_____, Member, Consulting Faculty
COL Judith A. Bowers, Ph.D.

Accepted this 31st day of May 2002 by:

_____, Director, Graduate Degree Programs
Philip J. Brookes, Ph.D.

The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

INTEGRATING MEDICAL SURVEILLANCE INTO THE MISSION OF THE MEDICAL DETACHMENT (PREVENTIVE MEDICINE), by MAJ Timothy G. Bosetti. 106 Pages.

Over the last decade, the United States Army has played an increased role in stability and support operations in which the Medical Detachment (Preventive Medicine) [MED DET (PM)] has taken on a new mission, medical surveillance.

This research studies the impact of taking on the new mission and identifies the changes needed to integrate medical surveillance into the mission of the MED DET (PM) based upon the doctrine, training, leader development, organizational design, material, and soldier systems (DTLOMS) model. In order to address primary question, this research analyzes medical surveillance conducted by the MED DET (PM) in the Balkan theater of operations.

The findings suggest that medical surveillance is not fully integrated into the mission of the MED DET (PM) and changes are required in all DTLOMS domains. The investigator makes the following recommendations: defining medical surveillance and its requirements (Doctrine), defining the training requirements for medical surveillance in training manuals (Training), providing training on medical surveillance in officer and non-commissioned officer development programs and schools (Leader Development), defining the technical chains of communication in the organizational structure (Organization), providing equipment specifically designed to conduct medical surveillance (Materiel), and including medical surveillance into military occupational specialty proficiency tasks (Soldier Systems).

# ACKNOWLEDGMENTS

First and foremost, I would like to acknowledge my wife for all of her support throughout this year and being my strength and encouragement for taking on this research and completing it on time. Without her support over the last twelve years, I would not be here. Thank you.

I would also like to thank my thesis committee for taking time out of their schedule to support me on this effort. They have provided me with valuable guidance that has made this research and thesis a useful document. It has been my pleasure to work with you.

Lastly, I would like to thank Mrs. Davis for all the work she put into reviewing this thesis for format and answering my questions. I greatly appreciate your time in helping me complete this work.

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ACRONYMS

| | |
|---|---|
| AAR | After-Action Report |
| AMEDD | Army Medical Department |
| AOR | Area of Responsibility |
| AR | Army Regulation |
| ARTEP | Army Training and Evaluation Program |
| CALL | Center for Army Lessons Learned |
| CGSC | Command and General Staff College |
| COMMZ | Communications Zone |
| CZ | Combat Zone |
| DA | Department of the Army |
| DNBI | Disease and Non-Battle Injury |
| DOD | Department of Defense |
| DODD | Department of Defense Directive |
| DODI | Department of Defense Instruction |
| DTLOMS | Doctrine, Training, Leader Development, Organization, Materiel, and Soldier Systems |
| ENTO | Entomology |
| EPW | Enemy Prisoner of War |
| FM | Field Manual |
| GAO | General Accounting Office |
| JP | Joint Publication |
| MED DET (PM) | Medical Detachment (Preventive Medicine) |

| | |
|---|---|
| MOS | Military Occupational Specialty |
| MRI | Medical Re-Engineering Initiative |
| MTOE | Modified Table of Organization and Equipment |
| MTP | Mission Training Plan |
| NAS | National Academy of Sciences |
| NBC | Nuclear, Biological, and Chemical |
| NCO | Noncommissioned Officer |
| OEH/ED | Occupational and Environmental Health/Endemic Disease |
| OTSG | Office of the Surgeon General |
| PAM | Pamphlet |
| SANI | Sanitation |
| TG | Technical Guide |
| TIM | Toxic Industrial Materials |
| TM | Technical Manual |
| TRADOC | US Army Training and Doctrine Command |
| US | United States |
| USACHPPM | US Army Center for Health Promotion and Preventive Medicine |

# CHAPTER 1

## INTRODUCTION

Preventive medicine support in the United States (US) Army can be traced back to the American Civil War. However, it was on 18 May 1917, during World War I, that President Wilson created the Sanitary Corps, which later became the Medical Service Corps, and modern military preventive medicine was born (Bayne-Jones 1968, 156). Since its beginning, preventive medicine support has focused predominately on disease and non-battle injury (DNBI) prevention through basic hygiene and sanitation, food service sanitation, and pest management (Ashburn 1915, 101). These concepts formed the basis for the doctrine, structure, fielding, and employment of preventive medicine support from the Civil War through the Cold War.

Historical references from World War I and World War II highlight the basic principles and importance of preventive medicine support to military operations. According to Percy M. Ashburn in, *The Elements of Military Hygiene*, first published in 1913, the most common problems associated with the application of preventive medicine support to field forces were in the areas of basic sanitation and hygiene, food service sanitation, waste disposal, and pest management support (1915, 101). Prior to World War II, Major George C. Dunham, an Army doctor, wrote *Military Preventive Medicine*. He stated that since soldiers are "subjected to primitive environmental conditions," it is important to provide basic sanitation and hygiene, food service sanitation, waste disposal, and pest management to protect the health of field forces (1930, 2). Although neither of these specifically mentions medical surveillance, there is at least an understanding that military preventive medicine has a basic mission to protect the health of the force through

basic sanitation and hygiene, food service sanitation, waste disposal, and pest management support. In addition, both make reference to the effects of environmental conditions on the health of the force.

Since Operations Desert Shield and Desert Storm, there has been an increased awareness of disease prevention and medical force protection. This awareness was predominately the result of Gulf War illness and led to an emphasis on preventive medicine and medical surveillance, and to more focus on the environmental conditions that affect the health of the force. For example,

> Presidential Review Directive 5 (PRD 5) requires that the Department of Defense (DOD) "*identify and minimize or eliminate the short and long-term health effects of military service, especially during deployments (including war) on the physical and mental health of veterans*." (USACHPPM 2000b, 1)

Over the last decade, the US Army has played an increased role in stability and support operations, formerly known as contingency and peacekeeping operations. These operations have seen increased employment and emphasis on preventive medicine support. Medical force protection was emphasized and the Army Medical Department (AMEDD) initiated and attempted to integrate medical surveillance into these operations. Medical surveillance was not a standard mission for field preventive medicine units. The provision of basic hygiene and sanitation, food service sanitation, waste disposal, and pest management support still existed but now preventive medicine units had to conduct medical surveillance. Therefore, a new role and mission for field preventive medicine units was created. This new role and mission represents a change in preventive medicine support to the Army and to the AMEDD.

One facet of medical surveillance that directly impacts the field preventive medicine community is deployment environmental surveillance. Simply put, deployment environmental surveillance is the collection of air, soil, and water data through environmental sampling to document and record environmental conditions and their potential impact on the health of the soldier (USACHPPM 2000c, 7). Medical surveillance placed a new requirement on field preventive medicine units to collect environmental data through sampling. But how was medical surveillance being integrated into the mission of the Medical Detachment (Preventive Medicine), hereafter referred to as the MED DET (PM)?

## Research Question

This research attempts to answer the question, what changes are needed to integrate medical surveillance into the mission of the MED DET (PM)? To answer the primary research question, this research identifies and analyzes the medical surveillance mission using all of the doctrine, training, leader development, organization, materiel, and soldier systems (DTLOMS) domains, see figure 1. From this analysis, conclusions and recommendations regarding the changes needed to integrate medical surveillance into the mission of the MED DET (PM) can be made.

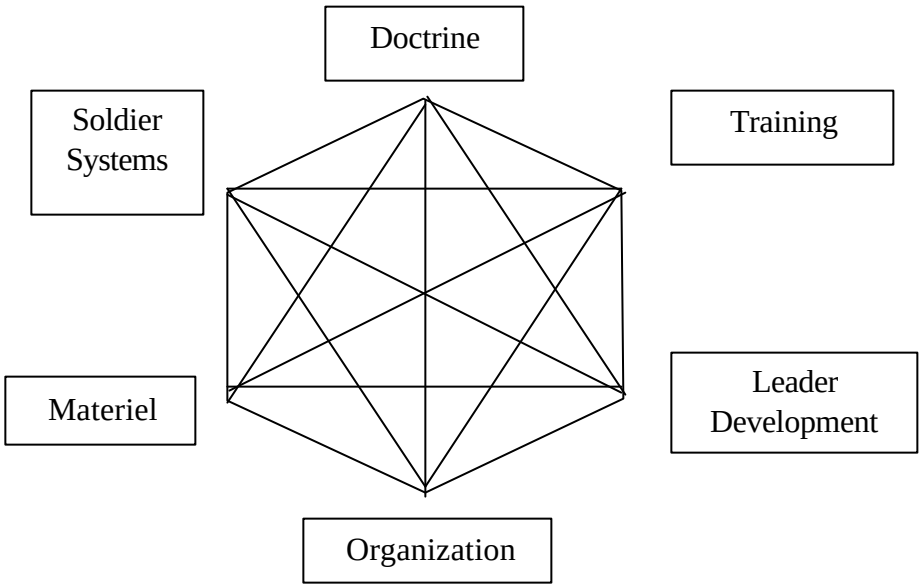


Figure 1. DTLOMS Domains. Source: CALL 1999, 21

Thus, the following subordinate questions are developed to assist in answering the primary question, What changes are needed to integrate medical surveillance into the mission of the MED DET (PM)?

Doctrine

1. How is medical surveillance defined in current Army doctrine?

2. What changes in doctrine are needed to integrate medical surveillance into the mission of the MED DET (PM)?

Training

1. Are current training programs for the MED DET (PM) sufficient to conduct medical surveillance?

2. What changes in training are needed to integrate medical surveillance into the mission of the MED DET (PM)?

Leader Development

1. Are the current leader development programs adequate to prepare officers and noncommissioned officers (NCOs) to conduct medical surveillance?

2. What changes in leader development programs are needed to integrate medical surveillance into the mission of the MED DET (PM)?

Organization

1. Is the current organization, Modified Table of Organization and Equipment (MTOE), structured to support medical surveillance?

2. What changes in the organization, MTOE, of the MED DET (PM) are needed to integrate medical surveillance into the mission of the MED DET (PM)?

Materiel

1. Does the current MED DET (PM) have the equipment needed to conduct medical surveillance?

2. What changes in equipment and materiel are needed to integrate medical surveillance into the mission of the MED DET (PM)?

Soldier Systems

1. Does the current MED DET (PM) have the people with the right military occupational specialty (MOS) skills to conduct medical surveillance?

2. What changes in soldier systems (MOS skills) are needed to integrate medical surveillance into the mission of the MED DET (PM)?

## Scope and Delimitation

In order to address the research question and subordinate questions, the investigator analyzed the medical surveillance mission of the MED DET (PM) in stability and support operations, such as those in the Balkans. The research identifies the shortfalls in conducting medical surveillance by examining current stability and support operations in the Balkan theater of operations: Operations Joint Endeavor, Guard, and Forge in Bosnia, Task Force Hawk in Albania, and Operation Joint Guardian in Kosovo and Macedonia. Since some of these operations are ongoing, data collection from these operations will terminate on 31 December 2001.

This research is limited to the Balkan area of operations. Unlike other stability and support operations, the Balkan area of operations has been a test bed for the implementation of medical surveillance. In addition, these operations have been of sufficient length to implement medical surveillance over several troop rotations. This is unique since it demonstrates variations between rotations in the execution of medical surveillance and the interaction with Echelon IV and V preventive medicine support.

This research looks at the impacts of medical surveillance on the Army's MED DET (PM). It is the unit most affected by the requirement to conduct medical surveillance and has the primary responsibility for providing medical surveillance and preventive medicine support to stability and support operations, such as in the Balkan theater of operations.

Because this research is limited to the MED DET (PM), the research will only look at the impacts of the medical surveillance mission on the leader development of the Medical Service Corps officer and the Preventive Medicine Specialist MOS. This limits

the scope of the research to only the personnel directly involved with MED DET (PM). This excludes the role of the preventive medicine physician and community health nurse from the research since their responsibilities are typically found at a higher echelon of support.

Medical surveillance is a broad term encompassing a multifaceted range of medical support including, disease surveillance, mental health, environmental surveillance, and health risk assessments. Since this research focused on the changes required to integrate medical surveillance into the mission of the MED DET (PM), the research will be limited to the deployment environmental surveillance portion of medical surveillance. The deployment environmental surveillance portion of the medical surveillance program has the most impact on the MED DET (PM), since the MED DET (PM) is the first tactical unit in the Army to conduct this form of medical surveillance. Therefore, when referring to medical surveillance in this report, the author is limiting that term to signify the deployment environmental surveillance portion that feeds into the overall medical surveillance program.

Although this research will address the interaction of the MED DET (PM) with echelon IV and V preventive medicine support, it will not address interactions with nonmilitary organizations, such as the Centers for Disease Control and the Public Health Service. Interaction with nonmilitary organizations was omitted since the research is concerned with the military aspects of medical surveillance in stability and support operations.

## Definitions

The following definitions are provided to give a general understanding of the terms used in this research. A complete list of acronyms is included in the preliminary pages, and definitions are included in the glossary.

The DTLOMS domains (shown in figure 1) defined in this thesis were quoted from a 1999 Center for Army Lessons Learned (CALL) Newsletter:

> Doctrine. Doctrine provides a holistic basis for the Army to incorporate new idea, technologies, and organizational designs. It is the philosophical underpinning for all DTLOMS products. Doctrine serves as a catalyst for change, explaining that change in language soldiers and leaders can understand. (CALL 1999, 20)
>
> Training. Training molds the Army into a force that is capable of decisive victory. It ensures that soldiers are prepared to fight and win. The Army has one standard. That standard is tough, realistic, battle-focused training that prepares soldiers and units for a variety of missions. (CALL 1999, 20)
>
> Leader Development. Leader development is the process of developing or promoting the growth of confident, competent military leaders who understand and are able to exploit the full potential of present and future doctrine, organizations, technology, and equipment. Leadership is the product of the leader development process. Effective leadership transforms human potential into effective performance. (CALL 1999, 21)
>
> Organizations. Organizational design encompasses the allocation of personnel and equipment to units to perform specific types of missions. As the Army becomes smaller but is expected to accomplish a wider variety of complex missions, unit organizations and staffs will be tailored to the mission. These tailored organizations will face a variety of environmental challenges during all operations. (CALL 1999, 21)
>
> Materiel. Materiel requirements encompass the combat development function. The AMEDD combat development staffs represent the "users," i.e., the field Army, in providing a statement of need, or "requirement," to DA [Department of the Army] and DOD [Department of Defense] decision makers and to material developers in the Army Materiel Command. The Operational Requirements Document (ORD) drives the development of the Army's new equipment. (CALL 1999, 21)

> Soldier Systems. Quality soldiers, trained and led by competent and caring leaders, will remain the keys to success in Army operations. Soldiers of the 21st Century will face a variety of environmental challenges when preparing for and executing missions. (CALL 1999, 21)

Medical Detachment (Preventive Medicine):

The MED DET (PM) is a corps asset that provides Echelon III preventive medicine support in a theater of operations. There are two types of MED DET (PM) currently in the Army: the Entomology (ENTO) and Sanitation (SANI) Detachments. These units have similar capabilities, functions, and missions. The major difference between the two units is the area and aerial spray capabilities of the MED DET (PM) (ENTO). Under the Medical Re-engineering Initiative (MRI), the organization and equipment of these two units will be transformed into a single, multipurpose unit called the Preventive Medicine Detachment (DA 2000b, 4-1 and Appendix B). A comparison of the mission and capabilities of the MED DET (PM) (ENTO) and the MED DET (PM) (SANI) are shown in table 1 and in Appendix A.

Table 1. Comparison of Capabilities

| MEDICAL DETACHMENT (PREVENTIVE MEDICINE) | | |
|---|---|---|
| Table of Organization & Equipment | Entomology | Sanitation |
| | 08-499L000 | 08-498L00 |
| Mission | Provide preventive medicine support and consultation in the areas of entomology, DNBI prevention, field sanitation, sanitary engineering and epidemiology to minimize the effects of vectorborne diseases, enteric diseases, environmental injuries, and other health threats on deployed forces in the combat zone (CZ) and communications zone (COMMZ) | Provide preventive medicine support and consultation in the areas of DNBI prevention, field sanitation, entomology, sanitary engineering and epidemiology to minimize the effects of environmental injuries, enteric diseases, vectorborne diseases, and other health threats on deployed forces in the CZ and COMMZ |
| Basis of Allocation | 1 per 45,000 personnel<br>1 per 100,000 enemy prisoners of war (EPW) | 1 per 22,500 personnel<br>1 per 50,000 EPW |
| Assignment | Assigned to a Medical Brigade or a Medical Group, and normally attached to an Area Support Medical Battalion | Assigned to a Medical Brigade or a Medical Group, and normally attached to an Area Support Medical Battalion or other medical units (such as a Combat Support Hospital). |
| Mobility | Unit is 100% mobile in a single lift using its authorized organic vehicles | Unit is 100% mobile in a single lift using its authorized organic vehicles |
| Capabilities | Provides surveillance and control of disease vectors and reservoirs in assigned areas, to include area and aerial spraying. | |
| | Monitors pest management, field sanitation, water treatment and storage, waste disposal, and DNBI control practices of units in assigned areas. Provides advice and training as necessary. | Monitors pest management, field sanitation, water treatment and storage, waste disposal, and DNBI control practices of units in assigned areas. Provides advice and training as necessary. |
| | Investigates and evaluates pest management, sanitation, water supply, and waste disposal practices; and other environmental health-related problems. Recommends corrective measures as necessary. | Investigates and evaluates pest management, sanitation, water supply, and waste disposal practices; and other environmental health-related problems. Recommends corrective measures as necessary. |
| | Conducts medical surveillance activities in the area of responsibility, to include coordinating, compiling, analyzing, and reporting medical surveillance data to assist in evaluating conditions affecting the health of the supported force. | Conducts medical surveillance activities in the area of responsibility, to include coordinating, compiling, analyzing, and reporting medical surveillance data to assist in evaluating conditions affecting the health of the supported force. |

Table 1. Continued

| MEDICAL DETACHMENT (PREVENTIVE MEDICINE) | | |
|---|---|---|
| Table of Organization & Equipment | Entomology | Sanitation |
| | 08-499L000 | 08-498L00 |
| Capabilities (continued) | Conducts epidemiological investigations. | Conducts epidemiological investigations. |
| | Collects environmental samples and specimens and performs selected analyses or evaluations to assist in assessment of the medical threat. | Collects environmental samples and specimens and performs selected analyses or evaluations to assist in assessment of the medical threat. |
| | Coordinates nuclear, biological and chemical (NBC)-related biological specimen collection and evaluation with treatment, NBC, laboratory, and intelligence personnel. | Coordinates NBC-related biological specimen collection and evaluation with treatment, NBC, laboratory, and intelligence personnel. |
| | Divides into three teams, as necessary, to perform assigned missions. | Divides into three teams, as necessary, to perform assigned missions. |
| | Monitors casualties, hospital admissions, and reports of autopsy for signs of chemical or biological warfare agent use. | Monitors casualties, hospital admissions, and reports of autopsy for signs of chemical or biological warfare agent use. |

Source: DA 1994, 11-7 and 11-8.

Echelons of Preventive Medicine Support:

Echelon I--provided by unit field sanitation teams. Primary responsibility lies with the small unit leader to ensure individual soldiers are protected against the medical threat and individual preventive medicine measures are employed (DA 1994, 11-3 – 11-5). Field Manual (FM) 21-10, *Field Hygiene and Sanitation*, provides information basic personal protective measures to the health of the individual soldier. Basic duties and responsibilities of the unit field sanitation team can be found in FM 21-10-1, *Unit Field Sanitation Team*.

Echelon II--provided by preventive medicine sections of divisions, separate brigades, and armored cavalry regiments. Echelon II preventive medicine units are

responsible for assessing the medical threat, training unit field sanitation teams, and providing commanders with recommendations to minimize DNBI (DA 1994, 11-5).

Echelon III--provided by the MED DET (PM) and the Area Support Medical Battalion Preventive Medicine Section (DA 1994, 11-5 – 11-6). Echelon III units augment and support echelons I and II preventive medicine units and provide unique preventive medicine capabilities with MED DET (PM).

Echelon IV--provided by the Area Medical Laboratory Preventive Medicine Support, which provides support in the areas of epidemiological (infectious) disease investigations, entomological laboratory analysis, radiation protection and analysis, sanitary engineering, and industrial hygiene (DA 1994, 11-5 and 11-6). Regional support commands of the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) also provide echelon IV preventive medicine support through laboratory support, consultative services, and personnel and equipment augmentation.

Echelon V--provided by USACHPPM, which serves as the Army's central repository and proponent for information and policy regarding medical surveillance. The USACHPPM augments echelon III and IV preventive medicine support and serves as a consulting agency for all Army field preventive medicine units, to include the MED DET (PM), on issues related to traditional preventive medicine missions, as well as on medical surveillance.

## Assumptions

Although there are two types of MED DET (PM), this research considers these two units to be identical in capabilities and interchangeable in function. This assumption is based upon the employment of the MED DET (PM) in the Balkan theater of operations

and the similarities in their mission. Therefore, when referring to the MED DET (PM), the author will not distinguish the difference between the ENTO and SANI detachments. This assumption is also consistent with the transformation of the two detachments into a single preventive medicine detachment under the MRI.

Lessons learned from the CALL and the AMEDD Center for Lessons Learned are assumed to be objective and reliable. It is assumed that lessons learned are representative of common issues related to the provision of medical surveillance and preventive medicine support in a theater of operation.

After-action reports (AARs) are assumed to be from reliable sources and to provide objective assessments of the operation. It is also assumed that comments from the AARs are representative of common issues related to the provision of medical surveillance and preventive medicine support in a theater of operation.

The impacts of medical surveillance on the MED DET (PM) will be evaluated against all of the DTLOMS domains. Using the DTLOMS domains, an analysis can be made of the impacts of medical surveillance on the mission of the MED DET (PM) in stability and support operations in the Balkan theater of operations. It is assumed that the impacts of medical surveillance on the mission of the MED DET (PM) are not limited to the Balkan theater of operations and stability and support operations. From this analysis, recommended changes needed to integrate medical surveillance can be made. These recommendations, based upon all of the DTLOMS domains, will assist the combat developer and the AMEDD Center and School in the integration of medical surveillance into the mission of the MED DET (PM). Therefore, it is assumed that using the DTLOMS domains in the analysis is an appropriate model for the evaluation.

## Limitations

This research was limited by time. Therefore, this study did not interview or survey commanders that had conducted medical surveillance in the Balkan theater of operations. As a result, the research was limited to published reports and internet searches.

Data collected for this research were limited to CALL, the AMEDD Center for Lessons Learned, and AARs from the Balkan theater of operations. Data from the AMEDD Center and School Directorate of Combat and Doctrine Development were not available for use in this research.

Programs of instruction for the AMEDD officer basic and advanced courses, the preventive medicine specialist advanced individual training course, and the AMEDD basic and advanced NCO courses were not available for use in this research.

## Significance of the Study

The significance of this study is the development of DTLOMS-based requirements for medical surveillance as they pertain to the MED DET (PM). The study will identify the changes required to integrate medical surveillance into the mission of the MED DET (PM) based upon all of the DTLOMS domains. The impact of the research is a systematic and comprehensive evaluation of the changes needed to fully integrate medical surveillance into the mission of the MED DET (PM).

This research will, at a minimum, provide three contributions to the Army. First, it will apply a logical process to generate requirements for medical surveillance that follows the Army force development process. Second, this research will provide a structured, documented evaluation of the current capabilities of the MED DET (PM)

compared to the requirements for medical surveillance based upon all of the DTLOMS domains. Third, this research identifies the DTLOMS requirements needed to integrate medical surveillance into the mission of the MED DET (PM). The DTLOMS requirements form the basis for the conclusions and recommendations that can be used by combat developers to make the necessary changes to integrate medical surveillance into the mission of the MED DET (PM). Using the Army force development process ensures a thorough evaluation of the changes needed to integrate medical surveillance. Since this process is standard in the Army for force modernization, it will be familiar to the combat developer and provide credibility to the conclusions and recommendations drawn from this analysis.

The next chapter is a review of the current literature on medical surveillance. Relevant information concerning medical surveillance as it applies to DTLOMS for the MED DET (PM) are discussed. This provides the necessary background information and current literature about the topic and the research conducted.

# CHAPTER 2

# LITERATURE REVIEW

This chapter describes some of the current literature available on medical surveillance and how it relates to the topic and the primary question of this research to identify what changes are needed to integrate medical surveillance into the mission of the MED DET (PM). This literature review is not intended to be an exhaustive listing of all references related to the topic area, but rather a compilation of the most applicable references regarding medical surveillance, environmental surveillance, and preventive medicine. It concludes with a section on the need for further research and why this research is needed.

## Department of Defense

After the Gulf War, the DOD issued two documents related to medical surveillance in response to Gulf War illness as a means to implement a standard program for the services to conduct medical surveillance. These documents formed the basis for medical surveillance. Department of Defense Directive (DODD) 6490.2, *Joint Medical Surveillance*, established policy and assigned responsibilities for routine medical surveillance of deployed US forces. This policy directs the monitoring of environmental threats and requires DOD components to conduct medical surveillance before, during, and after deployments. The policy defines medical surveillance as:

> The regular or repeated collection, analysis, and dissemination of uniform health information for monitoring the health of a population, and intervening in a timely manner when necessary. It is defined by the Centers for Disease Control and Prevention as the ongoing, systematic collection, analysis, and interpretation of health data essential to the planning, implementation, and evaluation of public health practice, closely integrated with the timely dissemination of these data to those who need to know. The final link of a military medical surveillance system

> is the application of these data to military training, plans and operations to prepare and implement early intervention and control strategies. A surveillance system includes a functional capacity for data collection, analysis and dissemination of information linked to military preventive medicine support of operational commanders. (DOD 1997b, 2)

The other document published by DOD is Department of Defense Instruction (DODI) 6490.3, *Implementation and Application of Joint Medical Surveillance for Deployments.* This instruction implements the policy of DODD 6490.2 and prescribes procedures for medical surveillance. Stated in those instructions are "the requirements for the identification and assessment of potential hazards and actual exposures environmental contaminates" (DOD 1997a, 4). It further states that specialized teams will deploy into an area of operations to conduct surveillance.

These two documents establish the requirement for medical surveillance in an area of operations and have been integrated into joint doctrine and published in Joint Publication (JP) 3-07.6, *Joint Tactics, Techniques, and Procedures for Foreign Humanitarian Assistance*. Joint Publication 3-07.6 states, "For the joint force, force health protection is a high priority" and medical surveillance "requires that the JTF [Joint Task Force] have robust preventive medicine assets to perform medical and environmental health risk assessments and identify effective preventive medicine measures to counter the threat to US forces" (DOD 2001, IV-20). The requirement for medical surveillance would default to the MED DET (PM). These documents do not provide specifics on the type, frequency, or amount of environmental samples to be collected or the means for the Armed Services to conduct medical surveillance. Therefore, two questions are left unanswered from the review of these two documents:

(1) What are the specific requirements for medical surveillance, and (2) How is medical surveillance integrated into the mission of the MED DET (PM)?

General Accounting Office

In May 1997, the General Accounting Office (GAO) published a report at the request of Congress to evaluate the actions taken by DOD to improve medical surveillance before, during, and after deployments. This report focused on Operation Joint Endeavor in Bosnia-Herzegovina, Croatia, and Hungary. It found that substantial improvements in medical surveillance were needed and that specific procedures to institutionalize medical surveillance were required (GAO 1997, 22-23). Although there was a medical surveillance system in place, this document highlights the deficiencies in the execution of the medical surveillance program for DOD. The deficiencies in data collection and archiving affect the MED DET (PM) and exemplify the need for integration of medical surveillance into the mission of the MED DET (PM).

National Academy of Sciences

Because medical surveillance has gained significant attention due to Gulf War illness, there have been several technical papers and reports regarding medical surveillance published by the National Academy of Sciences (NAS). Reports published by the NAS were a collaborative effort between the Institute of Medicine and the National Research Council to advise DOD on a long-term strategy for protecting the health of deployed forces. Four key tasks were identified:

1. Develop an analytical framework for assessing health risks to deployed forces;
2. Review and evaluate technology and methods for detection and tracking of exposures to potentially harmful chemical and biological agents;

3. Review and evaluate technology and methods for physical protection and decontamination, particularly of chemical and biological agents; and,
4. Review and evaluate medical force protection, health consequence management and treatment, and medical record keeping. (NAS 2000b, 2)

These reports contain information regarding the findings and recommendations of the NAS pertaining to medical surveillance and force health protection. The following discussion highlights some of the important findings from those reports specifically related to medical surveillance and deployment environmental surveillance. Not all information contained in those reports is presented here; it is limited to only the information that pertains directly to the scope this research.

Actions that should be conducted by DOD during deployments were presented in *Strategies to Protect the Health of Deployed U.S. Forces: Analytical Framework for Assessing Risk*, which states:

> The key activities associated with this phase are implementing plans made in anticipation of deployment (ongoing strategic baseline preparation and planning), refining them with information peculiar to the specific deployment, noting the advent of threatening exposures, and activating the appropriate parts of the response plans accordingly. This phase must also include vigilance for exposures that, despite all the planning, were unanticipated. DOD should examine the effectiveness of collecting and archiving environmental samples for future analysis. (NAS 2000b, 7)

*Strategies to Protect the Health of Deployed U.S. Forces: Analytical Framework for Assessing Risk* also discusses the importance of prior planning and integration of medical surveillance into contingency planning to conduct more detailed, deliberate environmental sampling to assess health risks. It is interesting to note that the report recommends that data collection should include information on meteorological conditions and forecasts, updates on the locations of hazardous materials, and current assessments of capabilities and inclinations of adversaries. Once troops have been deployed, soil, air,

and water samples must be taken and analyzed for pollutants (NAS 2000b, 7-8). The report also states,

> In addition, detection devices for the most likely threats and meteorological instruments should be set up to obtain information for use in exposure models. Over the course of the deployment, various kinds of information should be collected periodically (with the extent of the activity depending on the deployment specifics): environmental samples to document changes in environmental concentrations, information on unit activities and positions, and information collected by monitors and detectors. It is also important during the course of deployment to be vigilant for novel and unanticipated threats. (NAS 2000b, 7-8)

These actions would directly affect the MED DET (PM), since that unit would be responsible for the collection of that information. It recommends that the MED DET (PM) collect environmental samples, conduct continuous monitoring with direct-reading instruments, and collect meteorological data. The need for integration of medical surveillance applies not only to actions taken during the deployment but in the planning process prior to deployment that is clearly articulated in contingency plans.

In *Protecting Those Who Serve: Strategies to Protect the Health of Deployed U.S. Forces*, the NAS identified several deficiencies in DOD's medical surveillance program and recommends actions to correct those deficiencies. Recommendations that affect the MED DET (PM) and the integration of medical surveillance for DOD are the following:

(1) provide additional resources to improve environmental intelligence gathering, such as sampling;

(2) provide a single responsibility for collecting environmental data;

(3) integrate expertise for environmental monitoring; and,

(4) ensure preventive medicine assets are available to conduct environmental monitoring. (NAS 2000a, 1-8)

This report again asserts the need for change and integration of medical surveillance.

The book titled *Environmental Medicine: Integrating a Missing Element into Medical Education* provides an interesting concept, the need for medical professionals to receive training specifically related to the impacts of the environment on health and related environmental health issues (Pope et al. 1995, 1-2). Although this book is focused toward medical doctors, it stresses the need for integrating environmental health into training and education programs. Environmental health is the primary focus of the Medical Service Corps preventive medicine officer who commands the MED DET (PM). Over the years, there has been an increased awareness of and importance placed on the health effects resulting from environmental conditions, resulting in DOD integrating medical surveillance into combat health support. Since the medical profession is concerned with integrating environmental health and medicine into its practice, the question raised here is whether the Army has been successful in integrating medical surveillance into combat health support. This research will address that issue.

## The Need for Further Research

Based on the review of current literature concerning medical surveillance, it is clear that there is a need for further research on the integration of medical surveillance to protect the health of the deployed force. Reports from the GAO and the NAS identify several weaknesses in DOD's ability to conduct medical surveillance and to protect the health of the deployed force. From an Army perspective, this highlights that changes are needed to integrate medical surveillance into the mission of the MED DET (PM). That is

why this research focuses on this topic and attempts to answer the question, What changes are needed to integrate medical surveillance into the mission of MED DET (PM)?

## Contribution to the Body of Knowledge

This research will, at a minimum, provide three contributions to the Army. First, it will apply a logical process to generate DTLOMS requirements for medical surveillance using the Army force development process. Second, this research will provide a structured, documented evaluation of the current capabilities of the MED DET (PM) compared to the requirements for medical surveillance based upon all DTLOMS domains. Third, this research identifies the DTLOMS requirements needed to integrate medical surveillance into the mission of the MED DET (PM). The DTLOMS requirements form the basis for the conclusions and recommendations contained in this research that can be used by combat developers to make the necessary changes to integrate medical surveillance into the mission of the MED DET (PM). Using the Army force development process ensures a thorough evaluation of the changes needed to integrate medical surveillance was conducted and provides credibility to the conclusions and recommendations drawn from this analysis. Therefore, the AMEDD Center and School and combat developers can use the information contained in this evaluation and the recommendations to make the necessary changes to integrate medical surveillance into the mission of the MED DET (PM).

# CHAPTER 3

# RESEARCH METHODOLOGY

The primary question of this research is, What changes are needed to integrate medical surveillance into the mission of the MED DET (PM)? In order to answer this question, a sound methodology is needed to systematically evaluate and analyze the data. The research methodology consisted of three parts: (1) identification of requirements, (2) analysis of requirements versus the current capabilities, and (3) identification of changes to each of the DTLOMS domains to integrate medical surveillance into the mission of the MED DET (PM). This chapter begins with a brief discussion of the Army force development process (the model used for this research) and describes the research methodology used to develop the conclusions and recommendations to answer the primary research question.

## Army Force Development Process

The model used for this research is based upon the first phase of the Army force development process, which determines war-fighting requirements for DTLOMS. This model was used because it is the process used by force developers to make changes or improvements to Army systems. Therefore, the research methodology will be familiar to force developers. It follows the same logical process to identify requirements, to analyze the requirements compared to the current capabilities, and to draw sound conclusions as to the changes needed across all of the DTLOMS domains to integrate medical surveillance into the mission of the MED DET (PM).

The Army force development process consists of five phases: generate requirements, design organizations, develop organizational models, determine organizational authorizations, and document organizational authorizations (see figure 2).

> Force development is the initiating process of the Army Organizational Life Cycle Model and is the underlying basis for all other functions. It is a process which consists of defining military capabilities, designing force structures to provide these capabilities, and translating organizational concepts based on doctrine, technologies, materiel, manpower requirements, and limited resources into a trained and ready Army. (DA 2001b, 2-2R-1)

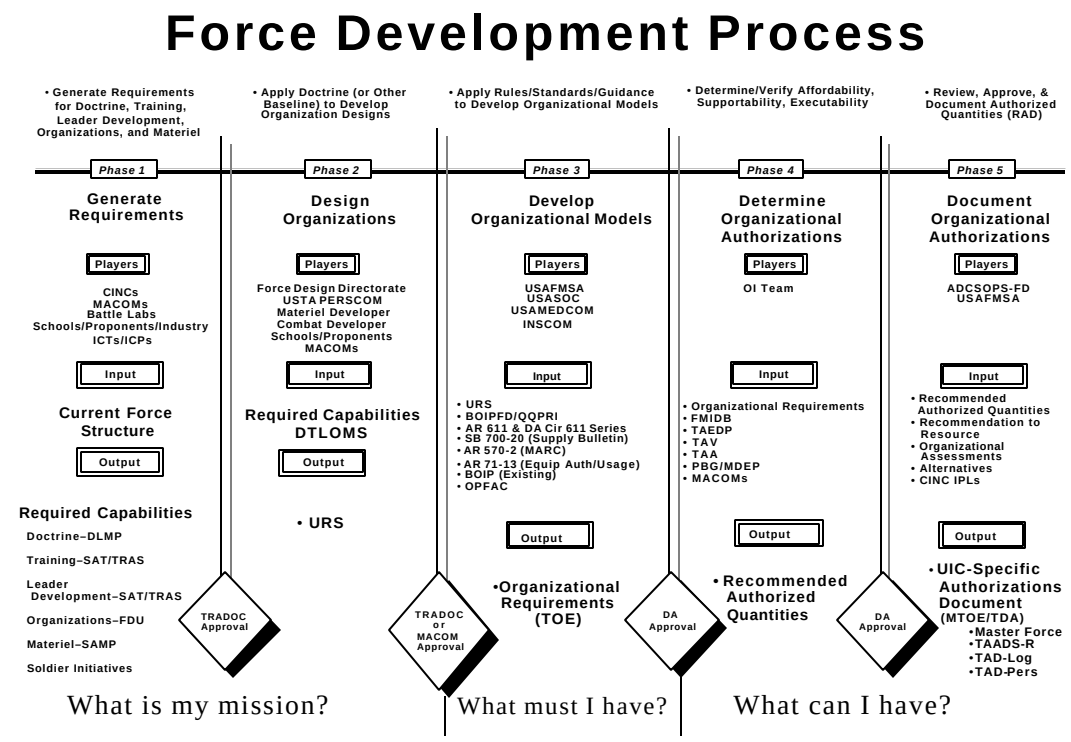


Figure 2. The Army Force Development Process. Source: DA 2001b, 2-2R-1

In addition to the Army force development process described above, US Army Training and Doctrine Command Pamphlet (TRADOC PAM) 71-9 was used as a guideline for this research because it describes the first phase, requirements generation, of

the Army force development process. This document describes in detail how the Army continually upgrades and changes the force through a systematic process that is based on desired capabilities versus known deficiencies. It emphasizes the need for studies and analysis and states that they are key to the requirements determination process. As a result, TRADOC PAM 71-9 provides guidance to the force developer in not only generating requirements but also analyzing those requirements using the DTLOMS domains. Therefore, TRADOC PAM 71-9 was a key document in developing the methodology used in this research.

## Research Methodology

As discussed, the research methodology is based upon the Army force development process and TRADOC PAM 71-9, which describe the requirements generation, analysis, and DTLOMS requirements processes. The methodology used in this research is divided into three sections: (1) requirements generation, (2) analysis, and (3) DTLOMS requirements, as shown in figure 3. Since this research methodology follows the Army force development process, the methodology used to draw conclusions and recommended changes to requirements based upon an evaluation of all DTLOMS domains will be familiar to combat developers, because it follows the same logical process to evaluate changes to the force structure.

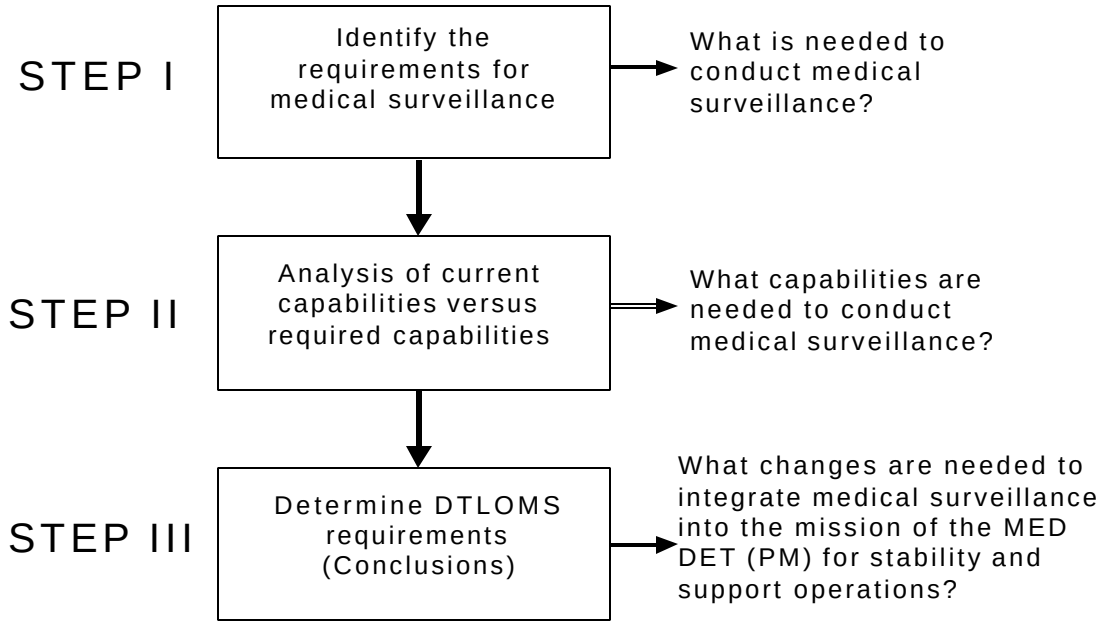


Figure 3. Research Model

## Requirements Generation

The requirements generation "process incorporates guidance in the form of constraints from the Army's senior leadership and/or new materiel capabilities evolving from the research, development, and acquisition process. Requirement generation occurs in the sequence: doctrine, training, leader development, organization, materiel, and soldier systems." (DA 2001b, 2-2R-2). This first step identifies and defines the mission the Army wishes to accomplish. In this case, the mission is conducting medical surveillance in stability and support operations. As stated earlier, this mission is limited to the MED DET (PM). The following extract from the US Army Command and General Staff College (CGSC) C400 student text emphasizes the importance of evaluating all the DTLOMS requirements and the impact of the new mission on those requirements.

> Requirements generation is the first phase of the Army force development process. Traditionally, that process has fostered competition among materiel systems, organizations, training, and doctrine to develop feasible solutions to resolve perceived deficiencies or shortcomings in the force. In recent history, due to leap ahead technological advances, materiel systems changes captured more attention than changes to training, doctrine, or organizations thereby creating a potential imbalance/inefficiency in correcting deficiencies. It was felt that the Army should first seek alternative solutions in doctrine, training, leader development, and organization, mainly because of the associated cost and timesaving advantages over materiel development programs. (DA 2001b, 2-2R-2)

For this research, the requirements for environmental surveillance come from DODD 6490.2 and DODI 6490.3, which define medical surveillance. Further requirements will come from USACHPPM, which defines the requirements for medical surveillance and deployment environmental surveillance, because it is the Army's lead agent for medical surveillance. In addition to these DOD sources, requirements for medical surveillance come from reports to Congress and other literature on medical surveillance discussed in chapter 2. These sources are the inputs to Step I of the research model. From these inputs, the required capabilities the MED DET (PM) must have in order to conduct medical surveillance are identified. The identification of these required capabilities is the output for Step I of the research model and becomes the input for Step II of the research model (see figure 4).

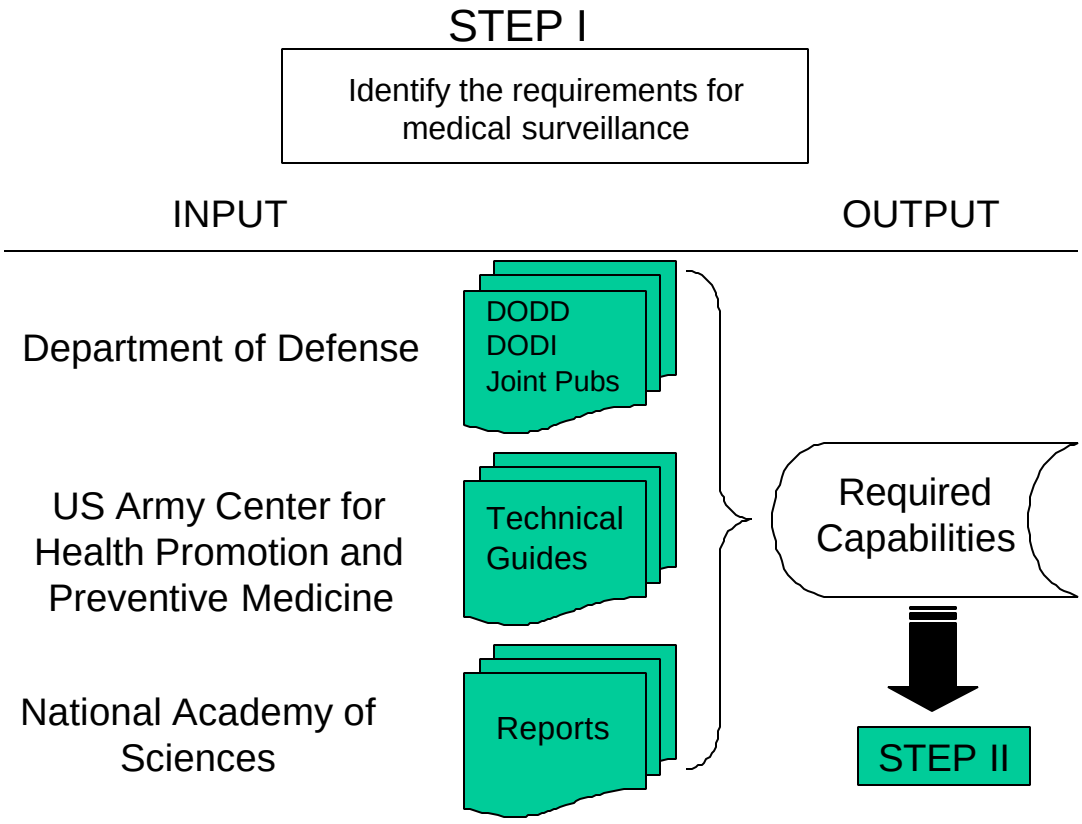


Figure 4. Step I: Identify the Requirements for Medical Surveillance

## Analysis

After the required capabilities have been identified, they will be compared to the current capabilities the MED DET (PM) using the model shown in figure 5. This comparison allows for an analysis of current capabilities to required capabilities. From this analysis, the changes needed to integrate medical surveillance into the mission of the MED DET (PM) can be identified for each of the DTLOMS domains.

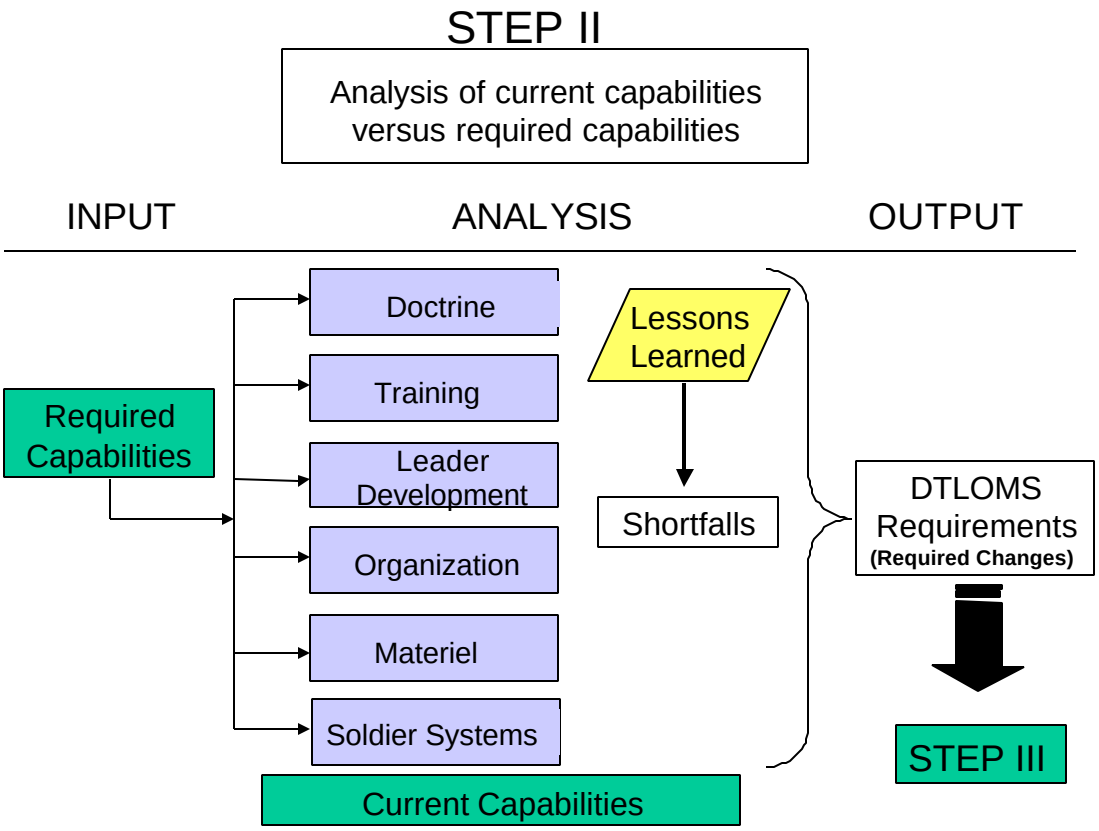


Figure 5. Step II: Analysis of Current Capabilities versus Required Capabilities

When evaluating current capabilities to the required capabilities, shortfalls will be identified. Lessons learned from previous operations are then inputted into the analysis to support or refute the shortfall finding. The addition of lessons learned provides the supporting evidence to the shortfall identified for each of the DTLOMS domains.

The DTLOMS domains focus on a specific function: doctrine, training, leader development, organization, materiel, and soldier systems (see figure 1). The DTLOMS domains were defined in chapter 1; the application of the DTLOMS domains used to evaluate the current force structure to the required capabilities for medical surveillance is described in the following sections. This process allows a systematic and thorough

approach to evaluate the changes needed to integrate medical surveillance into the mission of the MED DET (PM).

Doctrine. Army FMs and JPs provide the fundamental doctrine for the mission, function, and employment of the MED DET (PM). This research will evaluate the employment of the MED DET (PM) for medical surveillance in stability and support operations versus the current doctrinal employment. Deviations from doctrinal employment are identified and common trends from different operations noted. This portion of the evaluation should validate current doctrine or identify areas that need to be changed, based upon the evolving nature of current and future operations. The goal is to address the two doctrinal subordinate questions: (1) how is medical surveillance defined in current Army doctrine and (2) what changes in doctrine are needed to integrate medical surveillance into the mission of the MED DET (PM).

Training. Along with programs of instruction at the AMEDD Center and School and the Army Training Evaluation Program (ARTEP) manuals, FMs form the basis for training preventive medicine personnel and units. This research will identify the basic tasks that make up training programs for preventive medicine personnel and units. These will be compared to training deficiencies noted in AARs and lessons learned. This section addresses whether current training programs are adequate to support the changing missions. The goal of this evaluation is to determine: (1) whether current training programs for the MED DET (PM) are sufficient to conduct medical surveillance, and (2) what changes in training are needed to integrate medical surveillance into the mission of the MED DET (PM).

Leader Development. Leader development will look at the courses taught by the AMEDD Center and School to produce leaders who are trained and knowledgeable on medical surveillance and its employment in a theater of operations. The goal of this portion of the evaluation is to determine: (1) whether current leader development programs are adequate to prepare officers and noncommissioned officers (NCOs) to conduct medical surveillance, and (2) what changes in leader development programs are needed to integrate medical surveillance into the mission of the MED DET (PM).

Organization. Organizational design focuses on the chain of command, task organization during operations, and command relationships. This information will come from lessons learned, AARs, FMs, and other related documents. It will be evaluated against current doctrine governing the organizational and command relationships during deployments. Field manuals and MTOEs identify the basic doctrinal framework for the organization and required personnel strengths of preventive medicine units. The goal is to determine: (1) whether the current organization, MTOE, is structured to support medical surveillance, and (2) what changes in the organization, MTOE, of the MED DET (PM) are needed to integrate medical surveillance into its mission.

Materiel. Field manuals and MTOEs identify the minimum required material and equipment of preventive medicine units. However, changing missions and advances in technology demand modernization of equipment. This section of the research will examine the current equipment authorizations according to the MTOE and compare that against the current missions and changes facing the MED DET (PM) as they relate to medical surveillance. The goal of this evaluation is to determine: (1) if the current MED DET (PM) has the equipment needed to conduct medical surveillance, and (2) what

changes in equipment and materiel are needed to integrate medical surveillance into the mission of the MED DET (PM).

Soldier Systems. Soldier system is the category used to describe the requirements for a soldier to be proficient in a specified job skill. It includes additions, deletions, or modifications to an MOS that affect the force and or grade structure of existing occupational specialties to the creation of entirely new occupational specialties to accomplish assigned missions (DA 1999, 10-6). It encompasses basic and advanced individual training programs to produce a soldier trained in a specific MOS. For the purposes of this research, the thesis concentrates on the Preventive Medicine Specialist (MOS 91S). The basic document that details the requirements for soldier training and proficiency is FM 8-250, *Preventive Medicine Specialist*. The goal of this portion of the research is to determine: (1) whether the current MED DET (PM) has the people with the right MOS skills to conduct medical surveillance, and (2) what changes in soldier systems (MOS skills) are needed to integrate medical surveillance into the mission of the MED DET (PM).

## Lessons Learned

As shown in figure 5, lessons learned are used in the analysis of current capabilities versus the required capabilities. Lessons learned from the CALL and the AMEDD Center for Lessons Learned databases are used to support or refute the identified shortfalls during the analysis. They provide credibility to the analysis and to the shortfalls identified. The use of lessons learned during this stage of the analysis also identifies common shortfalls or systematic problems in each of the DTLOMS domains. The identification of these systematic problems is important because it emphasizes the

need for change and helps to develop the DTLOMS requirements in Step III of the research model.

## DTLOMS Requirements

Based upon the evaluation of current capabilities as opposed to the required capabilities, changes needed to integrate medical surveillance into the mission of the MED DET (PM) can be identified for each of the DTLOMS domains. Step III of the research model synthesizes the DTLOMS requirements, or required changes, into DTLOMS-based conclusions and recommendations. The analysis component of this research methodology in Step II establishes the framework to draw conclusions and develop recommendations to integrate medical surveillance into the mission of the MED DET (PM).

The output from this analysis is the required changes, according to DTLOMS domains, to integrate medical surveillance into the mission of the MED DET (PM) (see figure 6), that is to say, DTLOMS-based conclusions and recommendations

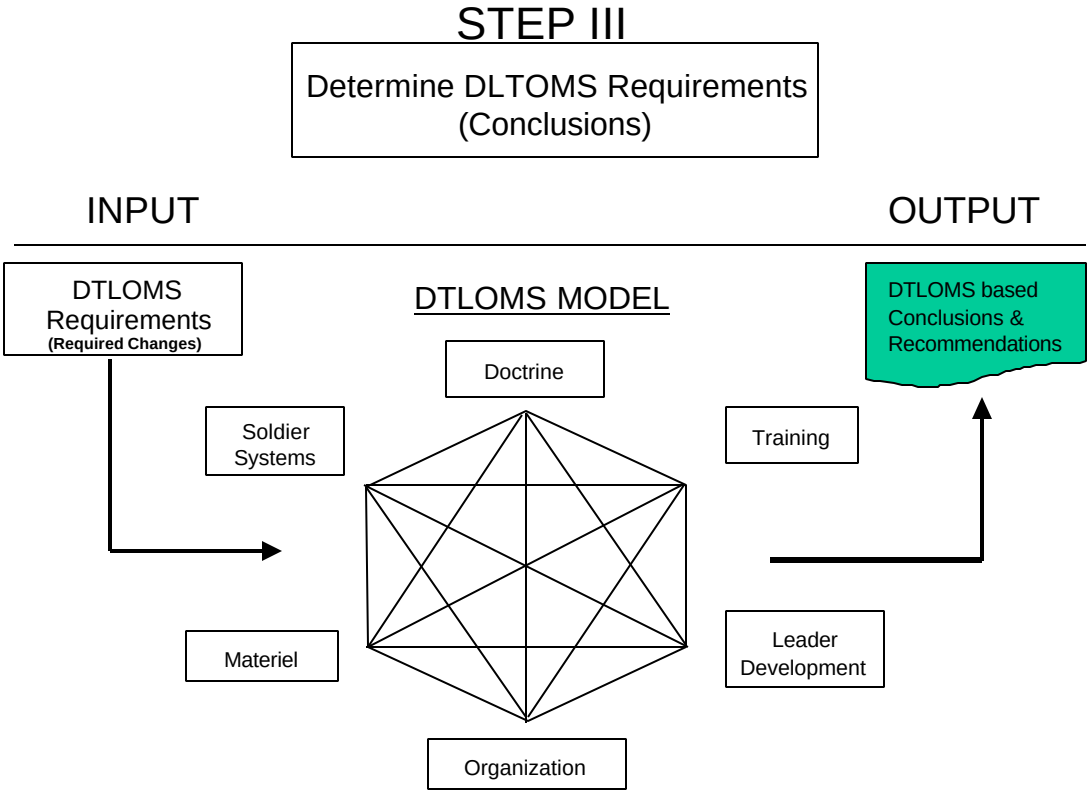


Figure 6. Step III: Determine DTLOMS Requirements (Conclusions)

The output from Step III of the research model forms the basis for the conclusions and recommendations made in chapter 5. Conclusions and recommendations drawn from the analysis can assist the force or combat developer by identifying the changes needed to integrate medical surveillance into the mission of the MED DET (PM).

# CHAPTER 4

# ANALYSIS

Chapter 4 details the analysis of all DTLOMS domains as they pertain to integrating medical surveillance into the mission of the MED DET (PM). This chapter is divided into two major sections that discuss the following: (1) identification of the requirements for medical surveillance and (2) the analysis of current capabilities of the MED DET (PM) versus the required capabilities for medical surveillance. These are the first two steps of the research methodology described in chapter 3 (figure 3).

The analysis of current capabilities compared to the required capabilities is accomplished using all of the DTLOMS domains. The analysis of current capabilities compared to the required capabilities reveals the shortfalls in each of the DTLOMS domains. These shortfalls were then compared to lessons learned. The identification of these shortfalls forms the basis for the conclusions and recommendations to identify the changes needed to integrate medical surveillance into the mission of the MED DET (PM).

## Step I: Identification of the Requirements for Medical Surveillance

The requirements for medical surveillance come from three major sources: the DOD, the USACHPPM, and the NAS reports. These three sources represent the most current information concerning medical surveillance and provide a vision for what the DOD's medical surveillance program is to accomplish. From these sources, the requirements for medical surveillance as they apply to the MED DET (PM) are identified (see figure 4).

The DOD published its requirements for medical surveillance in DODD 6490.2 and DODI 6490.3. These documents identify the basic need for medical surveillance and the goals for which the program is to accomplish. Table 2 is an extract from Enclosure 3 of DODI 6490.3; it identifies the medical surveillance components related to deployment. The predeployment, during deployment, and postdeployment columns for identifying risk and protective measures are the components of medical surveillance that affect the MED DET (PM).

Based upon table 2, the requirements for medical surveillance, as they pertain to the MED DET (PM), are the following:

1. Prepare and distribute medical threat assessments for an area of operation.

2. Include the identification of threats and preventive medicine countermeasures into operations planning.

3. Conduct assessments of environmental exposures during deployments that include analysis of air, soil, and water quality data.

4. Update countermeasures based upon environmental surveillance data collected during deployments.

5. Update threat intelligence and countermeasures after deployments based upon environmental assessments conducted during deployments for future use.

Table 2. Medical Surveillance Components Related to Deployment

| | Predeployment | During Deployment | Postdeployment |
|---|---|---|---|
| Identify population at risk | Field a seamless DOD ambulatory health data system.<br><br>Ensure deployment readiness of individual service members, using automated record system. | Collect data on unit strength, locations, and traumatic stressors on individual Service members' deployment histories. | Archive deployment information related to units and individual Service members. |
| Identify Exposures | Prepare and distribute threat assessments for potential area of operations*.<br><br>Identify threats for area of operations during planning for specific operations. | Special assessments of occupational and environmental exposures, including traumatic stressors.<br><br>Analyze disease / injury / combat stress incidence data. | Update threat intelligence based upon special assessments and disease/injury/ combat stress data. |
| Protective Measures | Determine countermeasures and incorporate into specific Operation Plans.<br><br>Execute pre-deployment countermeasures (train, equip, supply, combat stress brief, immunize). | Reinforce or introduce added, protective countermeasures based upon analysis of disease /injury / combat stress data. | Identify requirements for new countermeasures. |
| Assess Health | Perform continuous health status surveillance* and Tracking of deployability status*, (includes human immunodeficiency virus*, dental*, immunizations*, Deoxyribonucleic acid).<br><br>Maintain Serum Bank. | Capture disease/injury/ combat stress events (medical surveillance). Analyze data on disease / injury/ combat stress occurrence. | Perform scenario-specific screening and targeted medical evaluation of Service members.<br><br>Perform continuous medical surveillance as follow-up.<br><br>Disseminate findings. |
| Note *: Continuous readiness requirements, independent of deployment. | | | |

Source: DOD 1997a, Enclosure 3

In addition to the directives and instructions, JP 3-07.6 mandates that the Armed Services "monitor and identify both long- and short-term health effects of US forces during deployments" (DOD 2001, IV-20). It also requires "robust preventive medicine assets to perform medical and environmental health risk assessments and identify effective preventive medicine measures to counter the threat to US forces" (DOD 2001,

IV-20). Therefore, the impact on the MED DET (PM) is to be able to conduct environmental surveillance in a theater of operations to provide information that can be used to document existing and changing environmental conditions that can have a significant impact on US forces. The information collected by the MED DET (PM) is then used to conduct environmental health risk assessments and provide recommendations on preventive medicine measures that protect the health of the force and minimize the threat of environmental hazards. This requires the MED DET (PM) to have the capability to conduct environmental surveillance on a continuous basis in order to document existing and changing environmental conditions.

Reports from the NAS provide several recommendations to DOD to improve the medical surveillance program within the Armed Services. The recommendations that are most applicable to the MED DET (PM) in conducting medical surveillance are the following:

1. Develop an explicit list of objectives for efforts to protect the health and safety of deployed forces (NAS 2000b, 9).

2. Examine all the effects of a given hazardous agent or threat that could eventually lead to chronic illness (NAS 2000b, 9).

3. Collect and archive environmental samples before, during, and after deployments (NAS 2000b, 10).

4. Provide additional resources to improve environmental intelligence gathering, analysis, and dissemination to risk assessors and preventive medicine Practitioners (NAS 2000a, 4).

5. Assign a single responsibility for collecting, managing, and integrating information on non-battle related hazards (NAS 2000a, 4).

6. Integrate expertise on NBC and environmental sciences for efficient environmental monitoring of chemical warfare agents and toxic industrial chemicals for both short- and long-term risks (NAS 2000a, 4).

7. Ensure that adequate preventive medicine assets including laboratory capability are available to analyze deployment exposures in near real-time and respond appropriately (NAS 2000a, 5).

8. Record and archive environmental monitoring data and troop population and location data (NAS 2000a, 5).

9. Ensure adequate preventive medicine personnel and resources are available early on deployments to conduct environmental monitoring and respond with appropriate countermeasures (NAS 2000a, 4-5).

10. Develop and field improved meteorological monitoring and archiving systems to provide finer data grids of wind, temperature, and atmospheric stability in a theater of operations (NAS 2000c, 15).

11. Undertake a program of continuing education for preventive medicine personnel (NAS 999, 5).

12. Integrate efforts of environmental surveillance, preventive medicine, clinical, and information technology personnel to ensure the inclusion of medically relevant environmental and other exposures in the individual medical record (NAS 1999, 7).

As the Army's executive agent for medical surveillance, USACHPPM has published several technical guides (TGs) that outline requirements and guidelines for

medical surveillance. Of the technical guides published by USACHPPM, four are relevant to medical surveillance as it pertains to the MED DET (PM). They are the following:

1. USACHPPM TG 230 A, *Short-Term Chemical Exposure Guidelines for Deployed Military Personnel,* July 1999.

2. USACHPPM TG 230 B, *Long-Term Chemical Exposure Guidelines for Deployed Military Personnel (Draft),* May 2000.

3. USACHPPM TG 248, *Guide for Deployed Military Personnel on Health Hazard Risk Management (Draft),* August 2000.

4. USACHPPM TG 251, *Occupational and Environmental Health Field Sampling Guide for Deployments (Draft),* 2000.

Technical Guides 230 A and 230 B list the short- and long-term chemical exposure guidelines for deployments. This reference lists chemical parameters that could be monitored during deployments in air, soil, and water media. It does not prescribe what chemical parameters should be monitored but serves as a guide to focus the monitoring efforts.

Technical Guide 248, *Guide for Deployed Military Personnel on Health Hazard Risk Management (Draft),* defines the responsibilities of the MED DET (PM) as it pertains to occupational and environmental health/endemic disease (OEH/ED) surveillance, which are quoted below.

> The Medical Detachment, Preventive Medicine [will]:
> 1. Conduct OEH/ED surveillance activities in the area of responsibility (AOR), to include coordinating, compiling, analyzing, and reporting OEH/ED surveillance data to assist in evaluating conditions affecting the health of the supported force.

2. Collect occupational and environmental samples and specimens, and perform selected analyses or evaluations to assist in the medical threat risk assessment.
3. Conduct vector and reservoir control in the assigned AOR to include area and aerial spraying.
4. Coordinate NBC-related biological specimen collection and evaluation with treatment, NBC, laboratory and intelligence units and organizations. (FM 34-54, *Battlefield Technical Intelligence.*)
5. Monitor DNBI surveillance data, hospital admission, and reports of autopsy for signs of disease outbreaks and possible exposures to toxic industrial materials [TIMs] and NBC agents.
6. Monitor pest management, field sanitation, water treatment and storage, waste disposal, and DNBI control practices of units in AOR. Provide advice and training as necessary.
7. Conduct epidemiological consultation and disease outbreak investigation activities for the Corps Support Area.
8. Collect population information for troop concentrations and base camps that will help identify possible exposure groups (e.g., locations, living conditions, water source, food source, mission and activities performed by the unit).
9. Conduct specialized occupational and environmental surveillance missions in the AO [area of operation].
10. Conduct additional preventive medicine support as required. (USACHPPM 2000b, Appendix B)

Technical Guide 251 provides protocols and instructions for using environmental sampling equipment. This TG states that the requirement for environmental surveillance must include air, soil, and water monitoring (USACHPPM 2000c, 1). This TG also provides some insight into the types of environmental surveillance equipment needed by the MED DET (PM) to conduct medical surveillance in a theater of operation. None of this equipment is currently on the MTOE of the MED DET (PM) and must be provided by USACHPPM in order for the MED DET (PM) to conduct medical surveillance.

Based upon DODD 6490.2, DODI 6490.3, the NAS reports, and USACHPPM TG 248, the requirements placed on the MED DET (PM) to conduct medical surveillance are summarized in table 3.

Table 3. Required Capabilities

| Requirement Number | Required Capability | Reference(s) |
|---|---|---|
| 1 | Collect air samples for environmental surveillance | DODI 6490.3<br>JP 3-07.6<br>USACHPPM TG 248<br>NAS Reports |
| 2 | Collect water samples for environmental surveillance | DODI 6490.3<br>JP 3-07.6<br>USACHPPM TG 248<br>NAS Reports |
| 3 | Collect soil samples for environmental surveillance | DODI 6490.3<br>JP 3-07.6<br>USACHPPM TG 248<br>NAS Reports |
| 4 | Conduct continuous environmental surveillance of air, water, and soil media | DODI 6490.3<br>JP 3-07.6<br>USACHPPM TG 248<br>NAS Reports |
| 5 | Conduct assessments of environmental exposures based upon data collected and analyzed | DODI 6490.3<br>JP 3-07.6<br>USACHPPM TG 248<br>NAS Reports |
| 6 | Identify effective preventive medicine countermeasures for environmental exposures based upon data collected and analyzed | DODI 6490.3<br>JP 3-07.6<br>USACHPPM TG 248<br>NAS Reports |
| 7 | Monitor DNBI Surveillance data for signs of disease outbreaks and possible exposures to environmental exposures, which include TIM and NBC | DODI 6490.3<br>USACHPPM TG 248<br>NAS Reports |
| 8 | Collect troop population and location data as part of environmental and threat assessments | USACHPPM TG 248<br>NAS Reports |
| 9 | Collect meteorological data for environmental assessments | NAS Reports |
| 10 | Record and archive environmental surveillance data, troop population and location data, and meteorological monitoring data and results | NAS Reports |

Note: The Requirement Number is arbitrarily chosen as a means to track the required capabilities; it does not represent a priority or ranking system.

The generation of these requirements completes Step I of the research methodology and represents the required capabilities for medical surveillance that will be used in Step II of the research methodology to analyze the current capabilities of the

MED DET (PM) to the required capabilities for medical surveillance. Step II of the research methodology, the analysis, is provided in the following paragraphs.

Step II: Analysis of Current Capabilities Versus Required Capabilities

The following analysis of current capabilities versus the required capabilities for medical surveillance was conducted using each of the DTLOMS domains. The current capabilities of the MED DET (PM) were discussed in chapter 1, table 1, of this research and are in Appendix A. The following paragraphs describe each of the DTLOMS domains as it applies to medical surveillance based upon current references. Based upon the requirements for medical surveillance established in Step I of the research model, the shortfalls in each of the DTLOMS domains as it applies to medical surveillance are identified (see figure 5).

Doctrine

As defined in FM 3-0, "Doctrine is the concise expression of how Army forces contribute to unified action in campaigns, major operations, battles, and engagements" (DA 2000a, 1-12). Doctrine forms the basis for how the Army trains, develops it leaders, organizes, equips its forces, and educates its soldiers. Doctrine is based on principles and lessons from the past but is flexible and "adaptable to changing technologies, threats, and missions" (DA 2000a, 1-14).

The AMEDD is the proponent for Army doctrine concerning preventive medicine. Although not a doctrinal manual, Army regulation (AR) 40-5, *Preventive Medicine Services*, is the basic document that outlines the duties and responsibilities for Army preventive medicine. Chapter 14 of AR 40-5 discusses field preventive medicine support, duties, and responsibilities. Since AR 40-5 is dated 15 October 1990, it does not

include the force structure changes to the MED DET (PM) under Medical Force 2000, commonly referred to as MF2K, and the MRI. In addition, AR 40-5 does not define medical surveillance nor does it provide the duties, responsibilities, and requirements for medical surveillance.

Field Manual 8-55, *Planning for Health Service Support*, describes the echelons of preventive medicine support in a theater of operations and the missions, capabilities, and basis of allocation of the MED DET (PM) currently in the Army force structure. This manual describes the importance of preventive medicine and why it exists in the Army, "Preventive medicine is the most effective, lest expensive means of providing the combat commander with the maximum number of healthy, combat-effective soldiers" (DA 1994, 11-1).

One mission of the MED DET (PM) specified in FM 8-55 is to "conduct medical surveillance activities in an area of operation, to include compiling, analyzing, and reporting medical surveillance data to assist in evaluating conditions affecting the health of the supported force" (DA 1994, 11-6). However, medical surveillance is not clearly defined in this reference, nor are details provided on the types of medical surveillance needed to accurately evaluate conditions affecting the health of the deployed forces. The only type of medical surveillance that is mentioned is DNBI surveillance.

Preventive medicine support to stability and support operations is found in FM 8-42, *Combat Health Support in Stability Operations and Support Operations.* This reference touches on environmental injuries as a potential source for noncombat casualties. It is the first document that discusses the fact that some DNBI may be the result of threats from environmental conditions, such as pollution, industrial operations,

and environmental contamination. However, there is little mention of the need for medical surveillance to capture these environmental threats and how to conduct this surveillance.

A new FM published in August 2000, FM 4-02.17, *Preventive Medicine Services*, is the first Army doctrinal manual that defines medical surveillance and its applicability to preventive medicine. According to FM 4-02.17,

> Medical surveillance (MEDSURV) is the ongoing, systematic collection, analysis, and interpretation of data essential to the planning, implementation, and evaluation of military force health. The determination of unit-specific rates of illness and injuries of public health significance is the foundation of the MEDSURV program. Medical surveillance is closely integrated with the timely dissemination of these data to those responsible for prevention and control of DNBI. Implementing guidance for DOD is found in DOD Instruction 6490.3. (DA 2000b, 9-1)

As shown in the definition of medical surveillance, FM 4-02.17 incorporates DODI 6490.3 regarding joint medical surveillance into Army doctrine and describes the objective of medical surveillance as protecting the health of the force. Field Manual 4-02.17 also redefines the operational principles and basis of allocation for the MED DET (PM), previously identified in FM 8-55. Although this document describes the need to collect and analyze data, it fails to describe what data other than DNBI statistics should be collected and analyzed. In addition, it does not provide any guidance or procedures on how to transmit and archive medical surveillance data once collected.

Current doctrine outlines the need for medical surveillance but falls short of clearly identifying what needs to be conducted by the MED DET (PM). Based upon the review of current doctrine and the required capabilities for medical surveillance, the

required changes to doctrine are needed to integrate medical surveillance are summarized in table 4.

Table 4. Required Changes to Doctrine

| Requirement Number | Shortfall Description | Change Required? |
|---|---|---|
| 1 – 4 | Current doctrine does not include the need for the MED DET (PM) to collect air, soil, and water samples for medical surveillance nor does it provide direction for the MED DET (PM) to conduct continuous environmental surveillance of air, soil, and water media | YES |
| 5 | Although doctrine does state that the MED DET (PM) conduct assessments; it does not provide specific guidance on the need to conduct assessments of environmental exposures based upon data collected and analyzed | YES |
| 6 | Imbedded in doctrine is the requirement for the MED DET (PM) to identify effective preventive medicine countermeasures, it does not specifically address identifying countermeasures for environmental exposures based upon data collected and analyzed | YES |
| 7 | Monitoring DNBI Surveillance data for signs of disease outbreaks is included in doctrine; however, doctrine does not address monitoring DNBI data for possible exposures to environmental exposures, which include TIM and NBC | YES |
| 8 | None of the doctrinal references discuss the need to collect troop population and location data as apart of environmental and threat assessments | YES |
| 9 | Doctrine does not specify the requirement to collect meteorological data for environmental assessments | YES |
| 10 | Provide information on archiving and record keeping for medical surveillance into FM 8-55, FM 8-42, and FM 4-02.17 | YES |
| General | Update FM 8-55 to reflect current force structure for the MED DET (PM) | YES |
| General | Incorporate the duties, responsibilities, and requirements for medical surveillance into FM 8-55, FM 8-42, and FM 4-02.17 | YES |

Note: The Requirement Number is arbitrarily chosen as a means to track the required capabilities; it does not represent a priority or ranking system.

Lessons learned from the AMEDD Center for Lessons Learned were obtained to support the analysis provided in table 4. The lessons learned in the table below have a common thread; medical surveillance is not fully integrated into the mission of the MED

DET (PM) and doctrine. Table 5 contains lessons learned that reinforce the need for doctrinal integration of medical surveillance.

Table 5. AMEDD Lessons Learned Supporting Changes to Doctrine

| AMEDD Tracking Number* | Requirement Number Supported | Title | Finding |
|---|---|---|---|
| 4882 | 5 & 6 | Preventive Medicine as a member of the site selection team | PM must be part of the site selection team since they possess specific training to help identify environmental health threats |
| 4877 | 5 & 6 | Need for risk assessment prior to troop arrival | Develop and incorporate the appropriate support (medical, environmental, real estate, maintenance) package for recon assessment prior to sending soldiers into a high-risk situation. |
| 4384 | 6 | Lack of Uniformity in Preventive Medicine Policy | Preventive medicine should make their recommendations on requirements for deployments have a higher visibility in the Department of Defense |
| 3820 | 6 | Preventive Medicine Intelligence | Provide a single source of information from the Office of the Surgeon General (OTSG) on preventive medicine requirements |
| 3150 | 4 & 6 | Routing of NBC Samples for testing & reporting of results | Establish and disseminate doctrine which establishes procedures and responsibilities for collection, testing and reporting of NBC specimens/data |
| 2740 | 7 | Need for Doctrine on Collection of Routine Data | Creation of a plan for collecting standard epidemiological DNBI data during both peacetime and contingency operations |

Note *: "AMEDD Tracking Number" is derived from the AMEDD Center for Lessons Learned, which is available from http://lessonslearned.amedd.army.mil.

The two subordinate questions regarding doctrine can be answered. The first question was how is medical surveillance defined in current Army doctrine? Field manual 4-02.17 provides the best definition of medical surveillance. However, it does

not clearly define the types of medical surveillance required to accurately evaluate conditions affecting the health of the deployed forces. In addition, the duties, responsibilities, and requirements for medical surveillance are missing. The second question was what changes in doctrine are needed to integrate medical surveillance into the mission of the MED DET (PM)? This question was answered in table 4.

## Training

Training is how the Army prepares itself to be successful in future operations. The Army Training and Evaluation Program 8-429 (Medical Re-engineering Initiative)-30-Mission Training Plan [ARTEP 8-429(MRI)-30-MTP] is the primary mission training plan for the MED DET (PM). This document describes the tasks that the unit must perform to be successful in future operations. It is based upon current Army doctrine and is used to evaluate the readiness of the MED DET (PM). Up to this time, ARTEP 8-429(MRI)-30-MTP has been a useful tool for training and evaluating the readiness of the MED DET (PM). It fails to fully integrate medical surveillance into the mission training plan for the MED DET (PM). It does list some tasks that may be considered as elements of medical surveillance, such as conducting water testing and industrial hygiene surveys, see table 6. A complete listing of all ARTEP tasks for the MED DET (PM) is in Appendix E.

Table 6. ARTEP 8-429(MRI)-30-MTP Tasks

| ARTEP Task (Task Number) | Task Steps / Performance Measures |
|---|---|
| Supervise Preventive Medicine Operations (08-2-0700.08-429A) | 1) Direct employment of medical surveillance<br>2) Assist unit surgeons in consolidating, tabulating, interpreting, and reporting medical surveillance data<br>3) Maintain reports and logbooks |
| Perform Sanitary Engineering Operations, Surveys, and Inspections (08-2-0703.08-429A) | 1) Conduct field water source survey and perform analysis of water samples<br>2) Conduct industrial hygiene hazard evaluation and risk assessment<br>3) Make recommendations to unit commanders<br>4) Forward reports to unit commander for distribution |
| Provide Epidemiological Support (08-2-0704.08-429A) | 1) Identify risks of insidious or delayed health problems with continuous military operations in a hazardous environment<br>2) Document analytical design, analysis performed, and results obtained<br>3) Forward risk assessment results, findings, and recommendations to unit headquarters |

Source: DA 2001a, Chapter 5.

The ARTEP tasks listed in table 6 were compared to the required capabilities discussed in table 3. From this comparison, shortfalls were identified for each of the ARTEP tasks listed in table 6; those shortfalls are described in detail in the following paragraphs. This comparison shows that there are no tasks specifically identified to define medical surveillance as a mission for the MED DET (PM) and what tasks a MED DET (PM) must do to train and be proficient to accomplish medical surveillance.

Supervise Preventive Medicine Operations (08-2-0700.08-429A) does not provide details on what medical surveillance needs to be conducted. Nor does the task provide details regarding to whom or who or where the data get reported. Lastly, the task does not provide details on data archiving and record keeping for medical surveillance data. All of these items need to be integrated into the task of supervising preventive medicine operations.

Perform Sanitary Engineering Operations, Surveys, and Inspections (08-2-0703.08-429A) mentions water sampling and testing but does not indicate whether this is for routine collection or for medical surveillance and excludes the collection of air and soil samples for medical surveillance. This task also discusses hazard evaluation and risk assessment for industrial hygiene, but does not mention hazard evaluation and risk assessment for medical surveillance. Included in this task is providing reports to higher commands, but it does not specify what commands should get the report nor does it specify data archiving and record keeping. This task needs to be changed to add the collection of all sample media (air, soil, and water), hazard evaluation and risk assessment for medical surveillance, and data reporting, archiving, and record keeping.

Provide Epidemiological Support (08-2-0704.08-429A) specifies the need for identifying risks of insidious or delayed health problems with continuous military operations in a hazardous environment but does not provide more detail on how to conduct such a task. This is essentially medical surveillance, although it is not mentioned. This task also states the need to document analytical design, analysis performed, and results obtained and forward those results to higher headquarters. This fails to specify the reporting procedures, data archiving, and record keeping requirements.

Comparing the required capabilities to the tasks listed in ARTEP 8-429(MRI)-30-MTP, shortfalls between current capabilities and required capabilities are identified. The shortfalls and required changes needed to integrate medical surveillance into ARTEP 8-429(MRI)-30-MTP are provided in table 7.

Table 7. Required Changes to Training

| Requirement Number | Shortfall Description | Change Required? |
|---|---|---|
| 1 | Does not list the collection of air samples for medical surveillance | YES |
| 2 | Does not list the collection of water samples for medical surveillance | YES |
| 3 | Does not list the collection of soil samples for medical surveillance | YES |
| 4 | Does not specify the requirement for continuous environmental surveillance of air, soil, and water media | YES |
| 5 | Although it mentions conducting assessments, these are only for industrial hygiene related problems. This task needs to include conducting assessments based upon environmental exposures | YES |
| 6 | Imbedded in the ARTEP is the task to identify effective preventive medicine countermeasures for exposures based upon data collected and analyzed under supervising sanitary engineering operations | NO |
| 7 | Monitor DNBI Surveillance data for signs of disease outbreaks and possible exposures to environmental exposures, which include TIM and NBC is part of the ARTEP task to provide epidemiological support | NO |
| 8 | Does not list the collection of troop population and location data as part of environmental and threat assessments | YES |
| 9 | Does not provide tasks for the collection of meteorological data for environmental assessments | YES |
| 10 | Data archival and record keeping needs to be more clearly defined as well as the reporting procedures for medical surveillance findings and assessments | YES |

Note: The Requirement Number is arbitrarily chosen as a means to track the required capabilities; it does not represent a priority or ranking system.

The two subordinate questions regarding training can be answered. The first question was whether current training programs for the MED DET (PM) are sufficient to conduct medical surveillance. Based upon the review of ARTEP 8-429(MRI)-30-MTP, this training manual does not contain a medical surveillance task and falls short of defining specific tasks related to medical surveillance, such as the collection of air, water, and soil samples. Therefore, current training programs are not sufficient for the MED DET (PM) to conduct medical surveillance. The second question asked what changes in

training are needed to integrate medical surveillance into the mission of the MED DET (PM). The answer to this question can be found in table 7.

## Leader Development

Leader development can best be defined as the process the Army uses to train, educate, and grow leaders. It encompasses both the commissioned and noncommissioned officer development programs. For the AMEDD commissioned officer, these programs are nested in the AMEDD Officer Basic and Advanced Courses and career field producing schools, such as the Principles of Military Preventive Medicine Course at Fort Sam Houston, Texas. For the AMEDD NCO, leader development is found in the AMEDD Basic and Advanced NCO Courses. Programs of instruction and information pertaining to these courses were not available for this research. Lessons learned from the AMEDD Center for Lessons Learned were available and used in lieu of the programs of instruction to evaluate leader development. Those lessons learned that identify the need for change in leader development programs are provided in table 8.

Lessons learned in table 8 indicate a need for the integration of medical surveillance training into leader development programs. Although these lessons learned are generic and vague, they do indicate a need for better training and awareness of the preventive medicine mission and requirements during deployments.

Table 8. Leader Development Shortfalls

| AMEDD Tracking Number* | Requirement Number Supported | Title | Finding |
|---|---|---|---|
| 4643 | 5, 6, & 7 | Preventive Medicine Requirements | Emphasize preventive medicine in all service school leader courses of instruction |
| 3125 | 6 & 7 | Marketing | Preventive medicine instruction should be part of the CGSC core curriculum |
| 2740 | 7 | Need for Doctrine on Collection of Routine Data | Training medical personnel and units on data collection and its purpose |

Note *: "AMEDD Tracking Number" is derived from the AMEDD Center for Lessons Learned, which is available from http://lessonslearned.amedd.army.mil.

The first leader development subordinate question was whether the current leader development programs were adequate to prepare officers and noncommissioned officers (NCOs) to conduct medical surveillance. Without the programs of instruction for the officer and NCO development courses, this question is difficult to address. However, lessons learned in table 8 suggest that current leader development programs are inadequate and more training is needed for medical personnel on data collection and its purpose (AMEDD Tracking Number 2740). The second question asked what changes in leader development programs are needed to integrate medical surveillance into the mission of the MED DET (PM). Based upon the lessons learned in table 8, more emphasis on preventive medicine and additional training on medical surveillance data collection are needed.

## Organization

The organization for the MED DET (PM) can be found in FM 4-02.17 and FM 8-55. Both describe how the MED DET (PM) is organized, assigned, and operationally

deployed in a theater of operations. These documents also describe the command and control structure for the MED DET (PM). Although these organizational frameworks clearly define the operational chain of command, they do not define the technical chain of communication required for medical surveillance. The technical chain of command needs to be identified and integrated into these doctrinal manuals because the MED DET (PM) does not conduct medical surveillance in a vacuum. It requires the coordination and support of other medical organizations such as the Area Medical Laboratory and the USACHPPM.

In addition to the operational chain of command, medical surveillance requires coordination with agencies and organizations outside the medical community. Medical surveillance requires coordination with the engineer community for sampling and reporting of environmental analysis. This was stated in an AAR by the 71st MED DET (PM) in a summary report of lesson learned in Albania (Task Force Hawk 1999, 1-2). However, coordination is not limited to the engineer community, it also requires coordination and information exchange with the intelligence and safety organizations. Using lessons learned from the AMEDD Center for Lessons Learned, an evaluation was made concerning the organizational problems of collecting, analyzing, and reporting medical surveillance data. These are provided in table 9. Although these lessons learned are generic, they do highlight a shortfall in coordinating preventive medicine recommendations across organizational boundaries.

Table 9. Organizational Shortfalls

| AMEDD Tracking Number* | Requirement Number Supported | Title | Finding |
|---|---|---|---|
| 4384 | 6 | Lack of Uniformity in Preventive Medicine Policy | Preventive medicine should make their recommendations on requirements for deployments have a higher visibility in the DOD |
| 3820 | 6 | Preventive Medicine Intelligence | Provide a single source of information from OTSG on preventive medicine requirements |
| 3150 | 4 & 6 | Routing of NBC Samples for testing & reporting of results | Establish and disseminate doctrine which establishes procedures and responsibilities for collection, testing and reporting of NBC specimens/data |
| 2740 | 7 | Need for Doctrine on Collection of Routine Data | Creation of a plan for collecting standard epidemiological DNBI data during both peacetime and contingency operations |

Note *: "AMEDD Tracking Number" is derived from the AMEDD Center for Lessons Learned, which is available from http://lessonslearned.amedd.army.mil.

For example, the lack of uniform preventive medicine policy (lesson 4384) and preventive medicine intelligence (lesson 3820) indicate a problem in identifying effective preventive medicine countermeasures for an operation and conveying those recommendations clearly across the command. The need for preventive medicine to speak with one voice is important but indicates that preventive medicine within an organizational structure is not communicating through the technical chain of command to develop uniform policy and to recommend preventive medicine countermeasures.

Lesson 3150 highlights a problem in the ability of preventive medicine to coordinate with an organization outside the chain of command for laboratory support and

timely reporting of results. Coordination issues could have been resolved had doctrinal manuals provided a clear technical chain of communication for the analysis and reporting of data. The last lesson observed, lesson 2740, discusses standard collection of DNBI data. In order to accomplish this task, preventive medicine personnel must coordinate with organizations outside their operational chain of command. This again requires that doctrinal manuals clearly identify technical chains of communication to share information, data, results, and conclusions.

Based upon this evaluation, the subordinate questions regarding organization can be addressed. The first organization question was whether the current organization, that is MTOE, is structured to support medical surveillance. Although FM 4-02.17 and FM 8-55 clearly define the operational chain of command and organizational framework of the MED DET (PM), there are shortfalls in the definition of the technical chain of communication for the MED DET (PM). Therefore, there is a need for clearer guidance on and definition of the technical chain of communication in doctrinal manuals in order for the MED DET (PM) to collect, analyze, and report data related to medical surveillance. In addition, the technical chain of communication should include coordination with outside organizations and agencies, such as the engineer, intelligence, and safety organizations.

The changes in the organization of the MED DET (PM) that are needed to integrate medical surveillance into the mission of the MED DET (PM) are stated in table 9.

Materiel

The MTOE 08498L000 describes the equipment a MED DET (PM) is authorized (Appendix C). The capabilities of this equipment are addressed in various technical manuals (TMs) and are summarized in table 10. When comparing the authorized equipment of the MED DET (PM) to the required capabilities in table 3, there are some equipment shortfalls. For example, the equipment required to conduct air and soil sampling are not present in the MTOE of the MED DET (PM). In addition, there is no equipment available on the MTOE of the MED DET (PM) to conduct continuous environmental surveillance of air, soil, and water media, nor is there equipment available to collect meteorological data for environmental assessments. Therefore, the MTOE of the MED DET (PM) would require changes in equipment capabilities in order to have the required capabilities to collect samples and conduct continuous environmental surveillance of air, soil, and water media (Required Capabilities numbers 1-4 in table 3). In addition, the MED DET (PM) would require equipment to collect meteorological data for environmental surveillance (Required Capability number 9 in table 3).

The equipment used by a MED DET (PM) for medical surveillance in the Balkans is not authorized on the MTOE. For example, the equipment needed for the collection of ambient air quality data, soil sampling, and water quality monitoring is not on the MTOE of the MED DET (PM); it is provided by USACHPPM in order for the MED DET (PM) to conduct medical surveillance (Task Force Medical Eagle 2000a and 2000b). This highlights discrepancies between the authorized equipment and the doctrinal requirements and between authorized equipment and the equipment actually used in stability and support operations, such as those in the Balkans.

Table 10. Equipment Shortfalls

| Current MTOE Equipment (Line Item Number) | Capabilities | Shortfalls |
|---|---|---|
| Medical Equipment Set: Medical Laboratory, Combat Individual (E56611) | Provides limited capability for gram staining of blood samples and colorimetric test strips for urine samples | Does not provide laboratory capabilities for air, water, or soil analysis |
| Medical Equipment Set: Epidemiological Service Field (M24993) | Contains collapsible containers for water sampling and field refrigerators | Water sampling containers are not adequate for environmental sampling and analysis of water |
| Medical Equipment Set: Industrial Hygiene Survey Field (M28909) | Provides colorimetric test tubes for indoor air quality monitoring and a tri-gas meter for indoor/confined space use. | Only for indoor air quality monitoring; does not provide capability for monitoring ambient air quality |
| Water Quality Analysis Set-Purification (W47475) | Limited capability for analysis of water samples for pH, chlorine, total dissolved solids, turbidity, and NBC agents | Cannot perform a full spectrum analysis of water samples required for environmental surveillance of water samples |
| Medical Equipment Set: Water Quality Analysis Set - Preventive Medicine (Y36849) | Limited capability for analysis of water samples for pH, chlorine, total dissolved solids, ammonia, nitrate, nitrite, dissolved oxygen, iron, chlorides, and turbidity | Cannot perform a full spectrum analysis of water samples required for environmental surveillance of water samples |
| Water Testing Kit Bacteriological (Y37130) | Provides the capability to test water for bacteriological contaminants | Can only conduct bacteriological analysis of water and is limited to the media available, typically total coliform and *E. Coli* |

Source: DA 2000d, 9

Lessons learned from the AMEDD Center for Lessons Learned support the equipment shortfalls in the MED DET (PM), and are provided in table 11. These lessons learned show that the current equipment authorized by the MTOE is not adequate to conduct medical surveillance and reinforces the need for change in order for the MED DET (PM) to conduct medical surveillance.

Table 11. AMEDD Lessons Learned Supporting Changes to Equipment

| AMEDD Tracking Number* | Requirement Number Supported | Title | Finding |
|---|---|---|---|
| 3260 | 1, 2 & 4 | Laboratory Capability in the Field | Upgrade water and air testing capability at preventive medicine unit level by getting modern portable kits of water testing and air sampling |
| 3126 | 1-4 | Preventive Medicine Supplies Inadequate | Depending on the mission and area of the world, new or non-standard items need to be available and force issued to the units |
| 3086 | 2 & 4 | Environmental sampling equipment not adequate | Water sampling submission kits are being developed to provide sampling containers for collection and submission of water samples to supporting laboratories |
| 3085 | 2 & 4 | Detect a wider range of chemical contamination for terrorist attack | Conduct a market investigation to identify technologies that would provide capability to preventive medicine field units |
| 3082 | 2 & 4 | Capability to detect chemical agents in water supplies | Current chemical agent test kit does not have the sensitivity required to measure new field standards for mustard and cyanide |
| 2913 | 1-4 | Requisite equipment not on hand for PREV MED functions | The requisite equipment was not on hand in the MTOE units to support some of the preventive medicine functions |

Note *: "AMEDD Tracking Number" is derived from the AMEDD Center for Lessons Learned, which is available from http://lessonslearned.amedd.army.mil.

Subordinate questions for materiel can now be addresses. The first question asked whether the current MED DET (PM) has the equipment needed to conduct medical surveillance. Based upon the research, the equipment required for the MED DET (PM) to conduct medical surveillance is currently not authorized on the MTOE and must be provided by an outside organization. Therefore, changes to authorized equipment and material on the MTOE of the MED DET (PM) are needed to integrate medical

surveillance into the mission of the MED DET (PM). The changes in equipment and materiel that are needed to integrate medical surveillance into the mission of the MED DET (PM) can be summarized by examining the required capabilities in table 3. Simply stated, the MED DET (PM) requires equipment to collect air, soil, and water samples, to conduct continuous environmental monitoring, and to collect meteorological data.

Soldier Systems

Soldier system refers to the requirements for a soldier to be proficient in a specified job skill. It encompasses basic and advanced individual training programs to produce a soldier trained in a specific MOS, which for the MED DET (PM) refers to the Preventive Medicine Specialist, MOS 91S. The basic document that details the requirements for soldier training and proficiency is FM 8-250, *Preventive Medicine Specialist* and Soldier Training Program (STP) 8-91S15-SM-TG, *Soldier's Manual and Trainer's Guide: MOS 91S Preventive Medicine Specialist*.

Field Manual 8-250 describes the tasks a preventive medicine specialist must be able to perform. Although this document mentions surveillance, the focus is primarily on the collection of data regarding those vectors that can transmit diseases. It does not address medical surveillance and the collection of environmental data to document environmental conditions that may have an adverse effect on the health of a deployed force. Although there is some overlap between soldier systems and training, neither addresses medical surveillance training and competence for the preventive medicine specialist.

Soldier Training Program 8-91S15-SM-TG lists specific individual tasks preventive medicine specialists must perform to maintain their MOS proficiency. This

reference serves as the minimum requirements for a preventive medicine specialist and identifies those tasks that are critical to their specialty. A complete listing of those tasks is provided in Appendix F. Table 12 lists those tasks that are closely related to medical surveillance.

Table 12. Preventive Medicine Specialists Tasks

| Task Number | Subject Area | Task | Skill Level |
|---|---|---|---|
| 081-850-0121 | Water | Perform a pH test on water | 1 |
| 081-850-0122 | Water | Perform a Chlorine Residual Test on Treated Water | 1 |
| 081-850-0123 | Water | Collect a Treated Water Sample for Bacteriological Analysis | 1 |
| 081-850-0124 | Water | Perform Bacteriological Analysis on Water Samples | 1 |
| 081-850-0125 | Water | Perform Chemical Analysis on a Water Sample Utilizing the Water Quality Analysis Set | 1 |
| 081-850-0126 | Water | Perform Chemical Agents Test on Water with an M272 Kit | 1 |
| 081-850-0127 | Water | Inspect a Field Unit's Water Supply | 1 |
| 081-850-0128 | Water | Perform an Inspection for Cross Connections | 1 |
| 081-850-0294 | Industrial Hygiene | Measure Or Collect An Airborne Toxic Sample | 2 |
| 081-850-0323 | Preventive Medicine Procedures | Conduct A Survey For Airborne Toxic Substances | 3 |

Source: DA 1997b, i – iii.

When comparing the required capabilities in table 3 to those tasks in STP 8-91S15-SM-TG, there are significant shortfalls; none of these tasks relate directly to medical surveillance. There are no tasks identified for the preventive medicine specialist to be able to collect air, water and soils samples for environmental surveillance (Required Capabilities numbers 1-3, table 3). There are no tasks identified for the preventive medicine specialist to conduct continuous environmental surveillance for air, water, or

soil media (Required Capability number 4, table 3). And, there are no tasks identified for the preventive medicine specialist to collect meteorological data for environmental assessments (Required Capability number 9, table 3).

These shortfalls are also present in an AAR from Bosnia, where the MED DET (PM) conducts medical surveillance. The AAR from the 25th MED DET (PM) states that preventive medicine specialists were not trained on how to conduct environmental surveillance and they did not receive training on how to operate equipment designed for continuous environmental surveillance (Task Force Medical Eagle 2000a, 1-2).

In order for medical surveillance to be integrated into the mission of the MED DET (PM), preventive medicine specialists will need to be trained on several key tasks listed in table 13. Therefore, these key tasks need to be fully integrated into the advanced individual training programs that produce the Preventive Medicine Specialist MOS.

Table 13. Required Tasks for the Preventive Medicine Specialist

| Requirement Number | Required Task | Change Required? |
|---|---|---|
| 1 | Collect air samples for environmental surveillance | YES |
| 2 | Collect water samples for environmental surveillance | YES |
| 3 | Collect soil samples for environmental surveillance | YES |
| 4 | Conduct continuous environmental surveillance of air, water, and soil media | YES |
| 9 | Collect meteorological data for environmental assessments | YES |

Note: The Requirement Number is arbitrarily chosen as a means to track the required capabilities; it does not represent a priority or ranking system.

The subordinate questions regarding soldier systems can be addressed. The first questions asked whether the current MED DET (PM) has the people with the right MOS

skills to conduct medical surveillance. The MED DET (PM) has the right personnel; however, the skills of those personnel need to include medical surveillance. Currently, the Preventive Medicine Specialist MOS training programs lack specific training on medical surveillance. The changes in soldier systems (MOS skills) needed to integrate medical surveillance into the mission of the MED DET (PM) are specified in table 13.

## Chapter Summary

Using the research model described in chapter 3, chapter 4 has provided a summary of the requirements for medical surveillance and an analysis of the current capabilities of the MED DET (PM) versus the required capabilities to conduct medical surveillance, which are the first two steps of the research model. The detailed analysis of the current force structure versus the requirements for medical surveillance identified the shortfalls in each of the DTLOMS domains.

From this analysis, conclusions and recommendations can be drawn to identify the changes needed to integrate medical surveillance into the mission of the MED DET (PM) for each of the DTLOMS domains. The conclusions and recommendations from this analysis, Step III of the research model (see figure 6), are contained in chapter 5.

# CHAPTER 5

# CONCLUSIONS AND RECOMMENDATIONS

Chapter 5 evaluates the analysis of all DTLOMS domains completed in chapter 4 and draws conclusions and recommendations for integrating medical surveillance into the mission of the MED DET (PM). This is the last step of the research methodology described in chapter 3 (figure 3).

The analysis of current capabilities versus the required capabilities was accomplished in chapter 4 using all of the DTLOMS domains, which identified shortfalls in each of the DTLOMS domains. Those shortfalls form the basis for the conclusions and recommendations to identify the changes needed to integrate medical surveillance into the mission of the MED DET (PM). This is the last step of the research methodology and is shown in figure 6.

## Required Capabilities for Medical Surveillance

Generation of the requirements for the MED DET (PM) to conduct medical surveillance was based upon a review of current literature that included: DODD 6490.2, DODI 6490.3, the NAS reports, and USACHPPM TG 248. A summary of the required capabilities for medical surveillance is shown in table 14. Generation of these requirements completed Step I of the research methodology and represents the required capabilities of the MED DET (PM) to conduct medical surveillance. This formed the basis for the analysis of current capabilities of the MED DET (PM) to the required capabilities for medical surveillance.

Table 14. Required Capabilities for Medical Surveillance

| Requirement Number | Required Capability | Reference(s) |
|---|---|---|
| 1 | Collect air samples for environmental surveillance | DODI 6490.3<br>JP 3-07.6<br>USACHPPM TG 248<br>NAS Reports |
| 2 | Collect water samples for environmental surveillance | DODI 6490.3<br>JP 3-07.6<br>USACHPPM TG 248<br>NAS Reports |
| 3 | Collect soil samples for environmental surveillance | DODI 6490.3<br>JP 3-07.6<br>USACHPPM TG 248<br>NAS Reports |
| 4 | Conduct continuous environmental surveillance of air, water, and soil media | DODI 6490.3<br>JP 3-07.6<br>USACHPPM TG 248<br>NAS Reports |
| 5 | Conduct assessments of environmental exposures based upon data collected and analyzed | DODI 6490.3<br>JP 3-07.6<br>USACHPPM TG 248<br>NAS Reports |
| 6 | Identify effective preventive medicine countermeasures for environmental exposures based upon data collected and analyzed | DODI 6490.3<br>JP 3-07.6<br>USACHPPM TG 248<br>NAS Reports |
| 7 | Monitor DNBI Surveillance data for signs of disease outbreaks and possible exposures to environmental exposures, which include TIM and NBC | DODI 6490.3<br>USACHPPM TG 248<br>NAS Reports |
| 8 | Collect troop population and location data as part of environmental and threat assessments | USACHPPM TG 248<br>NAS Reports |
| 9 | Collect meteorological data for environmental assessments | NAS Reports |
| 10 | Record and archive environmental surveillance data, troop population and location data, and meteorological monitoring data and results | NAS Reports |

Note: The Requirement Number is arbitrarily chosen as a means to track the required capabilities; it does not represent a priority or ranking system.

## Doctrine

Based upon the analysis, there is a need to change doctrine in order to integrate medical surveillance into the mission of the MED DET (PM). These changes are summarized in table 15.

Table 15. Doctrine Conclusions

| Requirement Number | Shortfall Description | Change Required? |
|---|---|---|
| 1 – 4 | Current doctrine does not include the need for the MED DET (PM) to collect air, soil, and water samples for medical surveillance nor does it provide direction for the MED DET (PM) to conduct continuous environmental surveillance of air, soil, and water media | YES |
| 5 | Although doctrine does state that the MED DET (PM) conduct assessments; it does not provide specific guidance on the need to conduct assessments of environmental exposures based upon data collected and analyzed | YES |
| 6 | Imbedded in doctrine is the requirement for the MED DET (PM) to identify effective preventive medicine countermeasures, it does not specifically address identifying countermeasures for environmental exposures based upon data collected and analyzed | YES |
| 7 | Monitoring DNBI Surveillance data for signs of disease outbreaks is included in doctrine; however, doctrine does not address monitoring DNBI data for possible exposures to environmental exposures, which include TIM and NBC | YES |
| 8 | None of the doctrinal references discuss the need to collect troop population and location data as apart of environmental and threat assessments | YES |
| 9 | Doctrine does not specify the requirement to collect meteorological data for environmental assessments | YES |
| 10 | Provide information on archiving and record keeping for medical surveillance into FM 8-55, FM 8-42, and FM 4-02.17 | YES |
| General | Update FM 8-55 to reflect current force structure for the MED DET (PM) | YES |
| General | Incorporate the duties, responsibilities, and requirements for medical surveillance into FM 8-55, FM 8-42, and FM 4-02.17 | YES |

Note: The Requirement Number is arbitrarily chosen as a means to track the required capabilities; it does not represent a priority or ranking system.

In order to integrate medical surveillance into the mission of the MED DET (PM) several major changes need to be made in current doctrine. They are the need to update FM 8-55 to reflect current force structure for the MED DET (PM) and include the duties, responsibilities, and requirements for medical surveillance into FM 8-55, FM 8-42, and FM 4-02.17. None of these doctrinal references integrates the requirements for the collection and continuous surveillance of air, water, and soil media for environmental surveillance. Although conducting assessments, recommending preventive medicine countermeasures, and monitoring DNBI surveillance data are imbedded into the preventive medicine mission, they are not identified separately as requirements for medical surveillance. Doctrine does not integrate the need to collect troop population and location data and meteorological data for environmental surveillance and assessments. Doctrine also does not clearly define the procedures and requirements for record keeping and data archiving. These requirements are critical for conducting, recording, and reporting assessments and need to be included in doctrine.

In summary, medical surveillance and its components are not defined in doctrine as a requirement for the MED DET (PM). Medical surveillance needs to be integrated into doctrine and identified as a requirement. The duties, responsibilities, and requirements of the MED DET (PM) with regard to medical surveillance need to be clearly defined in doctrine. The changes to doctrine needed to integrate medical surveillance are identified in table 15. Changing doctrine will impact the other five DTLOMS domains: training, leader development, organization, materiel, and soldier systems. Therefore, any change in doctrine must be considered with respect to its impacts and changes to the other DTLOMS domains (see figure 1).

## Training

The manual for training, ARTEP 8-429(MRI)-30-MTP does not include tasks specifically related to medical surveillance. Therefore, current training programs for the MED DET (PM) are not sufficient to conduct medical surveillance. The changes in training needed to integrate medical surveillance into the mission of the MED DET (PM) are summarized in table 16.

Table 16. Training Conclusions

| Requirement Number | Shortfall Description | Change Required? |
|---|---|---|
| 1 | Does not list the collection of air samples for medical surveillance | YES |
| 2 | Does not list the collection of water samples for medical surveillance | YES |
| 3 | Does not list the collection of soil samples for medical surveillance | YES |
| 4 | Does not specify the requirement for continuous environmental surveillance of air, soil, and water media | YES |
| 5 | Although it mentions conducting assessments, these are only for industrial hygiene related problems. This task needs to include conducting assessments based upon environmental exposures | YES |
| 6 | Imbedded in the ARTEP is the task to identify effective preventive medicine countermeasures for exposures based upon data collected and analyzed under supervising sanitary engineering operations | NO |
| 7 | Monitor DNBI Surveillance data for signs of disease outbreaks and possible exposures to environmental exposures, which include TIM and NBC is part of the ARTEP task to provide epidemiological support | NO |
| 8 | Does not list the collection of troop population and location data as part of environmental and threat assessments | YES |
| 9 | Does not provide tasks for the collection of meteorological data for environmental assessments | YES |
| 10 | Data archival and record keeping needs to be more clearly defined as well as the reporting procedures for medical surveillance findings and assessments | YES |

Note: The Requirement Number is arbitrarily chosen as a means to track the required capabilities; it does not represent a priority or ranking system.

There should be an ARTEP task that specifically defines the requirements for medical surveillance. Tasks that need to be integrated into ARTEP 8-429(MRI)-30-MTP include the collection of air, water, and soil samples for environmental surveillance and continuous surveillance of air, water, and soil media. Collection of troop population and location data and meteorological data should also be included since these are essential for conducting risk assessments and developing appropriate preventive medicine countermeasures. Lastly, the ARTEP should specifically state requirements for data archival and record keeping.

## Leader Development

From the analysis, it was shown that preventive medicine should be emphasized in all service school leader courses of instruction, and that training medical personnel and units on data collection and its purpose is needed. Leaders of preventive medicine units, specifically the MED DET (PM), need to be educated on the procedures and requirements for medical surveillance. They need to understand the procedures for collecting environmental samples and conducting continuous environmental surveillance. They need to know how to develop sampling plans, collect the data, assess the data, and make recommendations based upon those findings.

Monitoring DNBI surveillance data is part of the preventive medicine mission, but leaders need to do more than monitor the data. They need to know what to look for. This requires integration of programs to educate leaders not only on the signs of disease outbreaks but also on the signs of possible exposures to environmental conditions.

Therefore, current leader development programs are not adequate to prepare officers and NCOs in medical surveillance. The changes needed to integrate medical

surveillance into current leader development programs are summarized in table 17 and highlight the need for change based upon the required capabilities for medical surveillance.

Table 17. Leader Development Conclusions

| Requirement Number | Required Task | Change Required? |
|---|---|---|
| 1-4 | Leaders of preventive medicine units should be educated on the collection of air, water, and soil samples for environmental surveillance and on the procedures and requirements for conducting continuous environmental surveillance of air, water, and soil media | YES |
| 5 & 6 | Leaders of preventive medicine units should be educated on the proper procedures to conduct assessments and identify preventive medicine countermeasures to environmental threats based upon data collected from medical surveillance | YES |
| 7 | Leaders of preventive medicine units should be educated on the procedures for monitoring DNBI surveillance data to identify signs of disease outbreaks and possible exposures to environmental exposures | YES |
| 10 | Leaders of preventive medicine units should have a thorough understanding of record keeping and archival of data pertaining to medical surveillance | YES |

Note: The Requirement Number is arbitrarily chosen as a means to track the required capabilities; it does not represent a priority or ranking system.

## Organization

Although FM 4-02.17 and FM 8-55 clearly define the operational chain of command and organizational framework of the MED DET (PM), there are shortfalls in the definition of the technical chain of communication for the MED DET (PM). Therefore, the current organizational structure of the MED DET (PM) is not adequate to support medical surveillance. There is a need for clearer guidance on and definition of the technical chain of communication in doctrinal manuals in order for the MED DET (PM) to collect, analyze, and report data related to medical surveillance. The changes to

organization needed to integrate medical surveillance into the mission of the MED DET (PM) are summarized in table 18.

Table 18. Organization Conclusions

| Requirement Number | Required Task | Change Required? |
|---|---|---|
| 1-4 | Clear guidance on the coordination with organizations outside the operational chain of command is required for the collection, submission, and receipt of samples and data pertaining to environmental surveillance | YES |
| 5 & 6 | Technical chains of communication should be clearly defined to enable the MED DET (PM) to obtain technical guidance on environmental assessments and appropriate preventive medicine countermeasures | YES |
| 7 | Technical chains of communication should be established to allow the MED DET (PM) to share DNBI surveillance data and findings with technical experts to assist in the identification of potential exposures to environmental conditions | YES |
| 8 & 9 | There needs to be established procedures for the transmittal of troop population and location data and meteorological data through the operational chain of command to USACHPPM for inclusion into environmental assessments and medical surveillance programs | YES |
| 10 | There needs to be established procedures for the MED DET (PM) to record and archive environmental surveillance data within both the operational chain of command and technical chain of communication. This also includes recording and archiving sampling and assessment data conducted by organizations outside the operational chain of command | YES |

Note: The Requirement Number is arbitrarily chosen as a means to track the required capabilities; it does not represent a priority or ranking system.

The data showed a problem in coordinating with organizations outside the operational chain of command. Medical surveillance requires this coordination and communication. Field manuals need to be revised to include the technical chain of command to overcome the problems with coordinating for and receiving support from

organizations outside the operation chain of command. These manuals should reflect the process through which the MED DET (PM) coordinates for laboratory support; sends and receives sampling data, obtains technical guidance on assessments and appropriate preventive medicine countermeasures; and archives environmental surveillance data. As stated in chapter 4, the technical chain of communication needs to include nonmedical organizations and agencies, such as the engineer, intelligence, and safety communities.

Materiel

The MED DET (PM) does not have the equipment needed to conduct medical surveillance. Equipment required for the MED DET (PM) to conduct medical surveillance is currently not authorized on the MTOE and must be provided by an outside organization. Therefore, changes to authorized MTOE equipment and materiel for the MED DET (PM) are needed to integrate medical surveillance into the mission of the MED DET (PM). The changes in materiel and equipment needed to integrate medical surveillance are summarized in table 19.

Table 19. Materiel and Equipment Conclusions

| Requirement Number | Required Task | Change Required? |
|---|---|---|
| 1-3 | The MED DET (PM) does not have equipment required to collect air, water, and soil samples for environmental surveillance | YES |
| 4 | The MED DET (PM) does not have equipment required to conduct continuous environmental surveillance of air, water, and soil media | YES |
| 9 | The MED DET (PM) does not have equipment to collect meteorological data for environmental assessments | YES |

Note: The Requirement Number is arbitrarily chosen as a means to track the required capabilities; it does not represent a priority or ranking system.

## Soldier Systems

The current MED DET (PM) does not have the right people with the right skills to conduct medical surveillance. Therefore, changes to soldier systems are required. Changes to soldier systems needed to integrate medical surveillance into the mission of the MED DET (PM) are summarized in table 20. The required tasks described in table 20 must be fully integrated into the advanced individual training programs that produce the Preventive Medicine Specialist MOS.

Table 20. Soldier System Conclusions

| Requirement Number | Required Task | Change Required? |
|---|---|---|
| 1 | Collect air samples for environmental surveillance | YES |
| 2 | Collect water samples for environmental surveillance | YES |
| 3 | Collect soil samples for environmental surveillance | YES |
| 4 | Conduct continuous environmental surveillance of air, water, and soil media | YES |
| 9 | Collect meteorological data for environmental assessments | YES |

Note: The Requirement Number is arbitrarily chosen as a means to track the required capabilities; it does not represent a priority or ranking system.

As stated previously, soldier tasks, such as those published in STP 8-91S15-SM-TG, do not include tasks specifically related to medical surveillance. There are no tasks identified for the preventive medicine specialist to be able to collect air, water and soils samples for environmental surveillance. There are no tasks identified for the preventive medicine specialist to conduct continuous environmental surveillance for air, water, or soil media. Finally, there are no tasks identified for the preventive medicine specialist to collect meteorological data for environmental assessments. In addition to being trained

to operate medical surveillance equipment, the preventive medicine specialist must be educated and trained on the proper maintenance of that equipment.

This research has shown that there are shortfalls in all DTLOMS domains regarding the ability of the MED DET (PM) to conduct medical surveillance. The conclusions were based upon the research conducted on integrating medical surveillance into the mission of the MED DET (PM). They were presented based upon each of the DTLOMS domains. From these conclusions, recommendations are made and presented in the next section of this chapter.

## Recommendations

The following recommendations are made based upon the research conducted. These recommendations are based upon a thorough analysis of the required capabilities of the MED DET (PM) to conduct medical surveillance using the Army force development process and research methodology defined in chapter 3.

1. Doctrine. Doctrine should be revised to integrate medical surveillance into the mission of the MED DET (PM). Medical surveillance should be clearly defined in doctrine, which provides clear guidance on the duties, roles, and responsibilities of the MED DET (PM) in conducting medical surveillance; and, clear guidance on the requirements for medical surveillance. Doctrine will also need to be updated to reflect the changes made to training, leader development, organization, materiel, and soldier systems in order to fully integrate medical surveillance into the mission of the MED DET (PM).

2. Training. Training references and manuals should be revised to integrate medical surveillance into the mission of the MED DET (PM). Medical surveillance

should be a clearly defined task of the MED DET (PM). This includes integration of tasks related to the collection and continuous surveillance of air, water, and soil media; collection of troop population and location data; and, collection of meteorological data for environmental surveillance. It should also include the following tasks as part of medical surveillance: conducting assessments, recommending countermeasures, and archiving data as part of medical surveillance.

3. Leader Development. Leader development programs should be revised to integrate medical surveillance into the officer and NCO development programs. Medical surveillance should be a standard part of the core curriculum for leader development programs. This includes instruction on the procedures and requirements for medical surveillance. Leaders need to understand the procedures for collecting environmental samples and conducting continuous environmental surveillance. In addition, they need to know who must develop sampling plans, collect the data, assess the data, and make recommendations based upon those findings.

4. Organization. Field manuals and doctrine should be revised to integrate medical surveillance into the organizational structure, specifically the technical chain of communication. Technical chains of communication need to be clearly defined in order for medical surveillance to be executed properly. This includes clearly defining the process through which the MED DET (PM) coordinates for laboratory support; sends and receives sampling data and obtains technical guidance on assessments and appropriate preventive medicine countermeasures; and archives environmental surveillance data. It should also ensure that coordination with organizations and agencies outside the medical community, such as the engineer and intelligence communities, are clearly defined.

5. Materiel. Current authorized equipment should be revised to integrate medical surveillance into the mission of the MED DET (PM). Equipment required for medical surveillance needs to be added to the MTOE of the MED DET (PM) in order to conduct medical surveillance. This includes the addition of air, water, soil sampling equipment and equipment for the continuous surveillance of air, water, and soil media for environmental assessments.

6. Soldier Systems. Soldier training, MOS proficiency schools, and MOS tasks should be revised to integrate medical surveillance into those programs. In order to conduct medical surveillance, soldiers need to be proficient and skilled at conducting medical surveillance and operating environmental surveillance equipment. This includes adding tasks to collect air, water, and soil samples for environmental surveillance and operating equipment required for continuous environmental surveillance.

This research studied the impacts of medical surveillance on the mission of the MED DET (PM) and used the Army force development process to identify changes needed to integrate medical surveillance into the mission of the MED DET (PM). Requirements for medical surveillance were identified and compared against the current capabilities of the MED DET (PM). The research provided DTLOMS based conclusions and recommendations. The research has shown that these are shortfalls in the ability of the MED DET (PM) to conduct medical surveillance. The findings suggest that medical surveillance is not integrated and that changes are needed to all of the DTLOMS domains in order to integrate medical surveillance into the mission of the MED DET (PM).

The resulting recommendations contained in this research provide a starting point for the AMEDD to integrate medical surveillance into the mission of the MED DET

(PM). Although they are grouped into the DTLOMS domains, these recommendations must be considered as a whole. Any changes made to one DTLOMS domain will affect the other. Therefore, changes to doctrine will also need to reflect the changes made to training, leader development, organization, materiel, and soldier systems in order to fully integrate medical surveillance into the mission of the MED DET (PM).

APPENDIX A

MEDICAL DETACHMENT (PREVENTIVE MEDICINE) CAPABILITIES

Table A1. Medical Detachment (Preventive Medicine) Capabilities

| MEDICAL DETACHMENT (PREVENTIVE MEDICINE) | | |
|---|---|---|
| Table of Organization & Equipment | Entomology | Sanitation |
| | 08-499L000 | 08-498L00 |
| Mission | Provide preventive medicine support and consultation in the areas of entomology, DNBI prevention, field sanitation, sanitary engineering and epidemiology to minimize the effects of vectorborne diseases, enteric diseases, environmental injuries, and other health threats on deployed forces in the CZ and COMMZ | Provide preventive medicine support and consultation in the areas of DNBI prevention, field sanitation, entomology, sanitary engineering and epidemiology to minimize the effects of environmental injuries, enteric diseases, vectorborne diseases, and other health threats on deployed forces in the theater |
| BOA | 1 per 45,000 personnel<br>1 per 100,000 EPW | 1 per 22,500 personnel<br>1 per 50,000 EPW |
| Assignment | Assigned to a Medical Brigade or a Medical Group, and normally attached to an Area Support Medical Battalion | Assigned to a Medical Brigade or a Medical Group, and normally attached to an Area Support Medical Battalion or other medical units (such as a Combat Support Hospital). |
| Mobility | Unit is 100% mobile in a single lift using its authorized organic vehicles | Unit is 100% mobile in a single lift using its authorized organic vehicles |
| Capabilities | Provides surveillance and control of disease vectors and reservoirs in assigned areas, to include area and aerial spraying. | |
| | Monitors pest management, field sanitation, water treatment and storage, waste disposal, and DNBI control practices of units in assigned areas. Provides advice and training as necessary. | Monitors pest management, field sanitation, water treatment and storage, waste disposal, and DNBI control practices of units in assigned areas. Provides advice and training as necessary. |

Table A1. Continued

| MEDICAL DETACHMENT (PREVENTIVE MEDICINE) | | |
|---|---|---|
| Table of Organization & Equipment | Entomology | Sanitation |
| | 08-499L000 | 08-498L00 |
| Capabilities (Continued) | Investigates and evaluates pest management, sanitation, water supply, and waste disposal practices; and other environmental health-related problems. Recommends corrective measures as necessary. | Investigates and evaluates pest management, sanitation, water supply, and waste disposal practices; and other environmental health-related problems. Recommends corrective measures as necessary. |
| | Conducts medical surveillance activities in the AOR, to include coordinating, compiling, analyzing, and reporting medical surveillance data to assist in evaluating conditions affecting the health of the supported force. | Conducts medical surveillance activities in the AOR, to include coordinating, compiling, analyzing, and reporting medical surveillance data to assist in evaluating conditions affecting the health of the supported force. |
| | Conducts epidemiological investigations. | Conducts epidemiological investigations. |
| | Collects environmental samples and specimens and performs selected analyses or evaluations to assist in assessment of the medical threat. | Collects environmental samples and specimens and performs selected analyses or evaluations to assist in assessment of the medical threat. |
| | Coordinates NBC-related biological specimen collection and evaluation with treatment, NBC, laboratory, and intelligence personnel. | Coordinates NBC-related biological specimen collection and evaluation with treatment, NBC, laboratory, and intelligence personnel. |
| | Divides into three teams, as necessary, to perform assigned missions. | Divides into three teams, as necessary, to perform assigned missions. |
| | Monitors casualties, hospital admissions, and reports of autopsy for signs of chemical or biological warfare agent use. | Monitors casualties, hospital admissions, and reports of autopsy for signs of chemical or biological warfare agent use. |

Source: DA 1994, 11-7 and 11-8.

# APPENDIX B

## MEDICAL DETACHMENT (PREVENTIVE MEDICINE) ARTEP TASKS

Table B1. Medical Detachment (PM) ARTEP Tasks

| ARTEP 8-429(MRI)-30-MTP<br>Collective Tasks | Conduct Strategic Deployment | Conduct Strategic Redeployment | Defend Assigned Area | Establish Unit Area Of Operations | Perform Combat Health Support Operations | Relocate Unit To A New Operating Site |
|---|---|---|---|---|---|---|
| **Deploy/Conduct Maneuver** | | | | | | |
| 63-2-8001.08-00CT<br>PERFORM DEPLOYMENT ALERT ACTIVITIES | **X** | | | | | |
| 63-2-8002.08-00CT<br>PERFORM PERSONNEL AND ADMINISTRATIVE PREDEPLOYMENT ACTIVITIES | **X** | | | | | |
| 63-2-8003.08-00CT<br>PERFORM PREDEPLOYMENT TRAINING ACTIVITIES | **X** | | | | | |
| 63-2-8004.08-00CT<br>PERFORM PREDEPLOYMENT SUPPLY ACTIVITIES | **X** | | | | | |
| 63-2-8005.08-0LCT<br>PERFORM PREDEPLOYMENT MAINTENANCE ACTIVITIES (UNIT WITHOUT MAINTENANCE ELEMENT) | **X** | | | | | |
| 63-2-8006.08-00CT<br>PREPARE VEHICLES AND EQUIPMENT FOR DEPLOYMENT | **X** | | | | | |
| 63-2-8007.08-00CT<br>PREPARE UNIT FOR NONTACTICAL MOVE | **X** | **X** | | | | |
| 63-2-8008.08-00CT<br>CONDUCT NONTACTICAL ROAD MARCH | **X** | **X** | | | | |
| 63-2-8009.08-00CT<br>PERFORM SEA PORT OF EMBARKATION ACTIVITIES FOR DEPLOYMENT | **X** | | | | | |
| 63-2-8010.08-00CT<br>PERFORM AERIAL PORT OF EMBARKATION ACTIVITIES FOR DEPLOYMENT | **X** | | | | | |

Table B1. Continued

| ARTEP 8-429(MRI)-30-MTP<br><br>Collective Tasks | Conduct Strategic Deployment | Conduct Strategic Redeployment | Defend Assigned Area | Establish Unit Area Of Operations | Perform Combat Health Support Operations | Relocate Unit To A New Operating Site |
|---|---|---|---|---|---|---|
| 63-2-8011.08-00CT<br>PERFORM AERIAL PORT OF DEBARKATION ACTIVITIES FOR DEPLOYMENT | **X** | | | | | |
| 63-2-8012.08-00CT<br>PERFORM SEA PORT OF DEBARKATION ACTIVITIES FOR DEPLOYMENT | **X** | | | | | |
| 63-2-8013.08-0SCT<br>PREPARE EQUIPMENT RECEPTION TEAM FOR TACTICAL ROAD MARCH (SERIAL) | **X** | | | | | |
| 63-2-8025.08-00CT<br>CONDUCT INTEGRATION ACTIVITIES | **X** | | | | | |
| 63-2-8026.08-00CT<br>CONDUCT STAGING ACTIVITIES | **X** | | | | | |
| 63-2-8014.08-00CT<br>PERFORM REDEPLOYMENT PERSONNEL AND ADMINISTRATIVE ACTIONS | | **X** | | | | |
| 63-2-8015.08-00CT<br>PERFORM REDEPLOYMENT TRAINING ACTIVITIES | | **X** | | | | |
| 63-2-8016.08-00CT<br>PERFORM REDEPLOYMENT SUPPLY ACTIVITIES | | **X** | | | | |
| 63-2-8017.08-0LCT<br>PERFORM REDEPLOYMENT MAINTENANCE ACTIVITIES (UNIT WITHOUT MAINTENANCE ELEMENT) | | **X** | | | | |
| 63-2-8018.08-00CT<br>PREPARE VEHICLES AND EQUIPMENT FOR REDEPLOYMENT | | **X** | | | | |
| 63-2-8019.08-00CT<br>PERFORM SEA PORT OF EMBARKATION ACTIVITIES FOR REDEPLOYMENT | | **X** | | | | |
| 63-2-8020.08-00CT<br>PERFORM AERIAL PORT OF EMBARKATION ACTIVITIES FOR REDEPLOYMENT | | **X** | | | | |

Table B1. Continued

| ARTEP 8-429(MRI)-30-MTP<br>Collective Tasks | Conduct Strategic Deployment | Conduct Strategic Redeployment | Defend Assigned Area | Establish Unit Area Of Operations | Perform Combat Health Support Operations | Relocate Unit To A New Operating Site |
|---|---|---|---|---|---|---|
| 63-2-8021.08-00CT<br>PERFORM AERIAL PORT OF DEBARKATION ACTIVITIES FOR REDEPLOYMENT | | X | | | | |
| 63-2-8022.08-00CT<br>PERFORM HOME STATION ACTIVITIES | | X | | | | |
| 63-2-8023.08-00CT<br>PERFORM SEA PORT OF DEBARKATION ACTIVITIES FOR REDEPLOYMENT | | X | | | | |
| 63-2-8024.08-00CT<br>PERFORM DEMOBILIZATION STATION ACTIVITIES | | X | | | | |
| **Protect the Force** | | | | | | |
| 63-2-1002.08-0SCT<br>PREPARE UNIT TO MOVE (SERIAL) | X | | | | | X |
| 63-2-1003.08-0SCT<br>CONDUCT TACTICAL ROAD MARCH (SERIAL) | X | | | | | X |
| 03-3-C226.08-0SCT<br>CROSS A CHEMICALLY CONTAMINATED AREA (SERIAL) | X | | | | | X |
| 03-3-C208.08-0SCT<br>CROSS A RADIOLOGICALLY CONTAMINATED AREA (SERIAL) | X | | | | | X |
| 63-2-1006.08-0SCT<br>DEFEND MARCH ELEMENTS (SERIAL) | X | | | | | X |
| 63-2-1008.08-0SCT<br>PERFORM ADVANCE/QUARTERING PARTY ACTIVITIES (SERIAL) | X | | | X | | |
| 63-2-1009.08-0SCT<br>OCCUPY NEW OPERATING SITE (SERIAL) | X | | | X | | |
| 63-2-1011.08-0MCT<br>SET UP UNIT DEFENSE | X | | | X | | |
| 63-2-0008.08-0MCT<br>ESTABLISH UNIT HEADQUARTERS AREA | X | | | X | | |
| 08-2-0220.08-00CT<br>ESTABLISH OPERATIONAL AREAS | X | | | X | | |

Table B1. Continued

| ARTEP 8-429(MRI)-30-MTP<br>Collective Tasks | Conduct Strategic Deployment | Conduct Strategic Redeployment | Defend Assigned Area | Establish Unit Area Of Operations | Perform Combat Health Support Operations | Relocate Unit To A New Operating Site |
|---|---|---|---|---|---|---|
| 63-2-R306.08-0MCT<br>EMPLOY PHYSICAL SECURITY MEASURES | **X** | | | **X** | **X** | |
| 03-3-C201.08-0MCT<br>PREPARE UNIT FOR NUCLEAR, BIOLOGICAL, AND CHEMICAL CONDITIONS | **X** | | | **X** | | |
| 44-3-C220.08-0MCT<br>USE PASSIVE AIR DEFENSE MEASURES | | | **X** | | **X** | |
| 63-2-1016.08-0MCT<br>EMPLOY OPERATIONS SECURITY MEASURES | **X** | **X** | **X** | **X** | **X** | **X** |
| 03-3-C202.08-0MCT<br>PREPARE UNIT FOR A CHEMICAL ATTACK | | | | | **X** | |
| 03-3-C203.08-0MCT<br>RESPOND TO A CHEMICAL ATTACK | | | | | **X** | |
| 03-3-C224.08-0MCT<br>PERFORM OPERATIONAL DECONTAMINATION | | | | | **X** | |
| 03-2-C312.08-00CT<br>PERFORM THOROUGH DECONTAMINATION | | | | | **X** | |
| 03-3-C205.08-0MCT<br>PREPARE FOR A FRIENDLY NUCLEAR STRIKE | | | | | **X** | |
| 03-3-C223.08-0MCT<br>RESPOND TO THE INITIAL EFFECTS OF A NUCLEAR ATTACK | | | | | **X** | |
| 03-3-C222.08-0MCT<br>RESPOND TO THE RESIDUAL EFFECTS OF A NUCLEAR ATTACK | | | | | **X** | |
| 63-2-R207.08-0MCT<br>PERFORM RADIOLOGICAL DECONTAMINATION | | | | | **X** | |
| 63-2-1024.08-0MCT<br>DEFEND UNIT AREA | | | **X** | | | |
| 63-2-1026.08-0MCT<br>REORGANIZE UNIT DEFENSE | | | **X** | | | |
| 63-2-1023.08-0MCT<br>CONDUCT HASTY DISPLACEMENT | | | **X** | | | |

Table B1. Continued

| ARTEP 8-429(MRI)-30-MTP<br>Collective Tasks | Conduct Strategic Deployment | Conduct Strategic Redeployment | Defend Assigned Area | Establish Unit Area Of Operations | Perform Combat Health Support Operations | Relocate Unit To A New Operating Site |
|---|---|---|---|---|---|---|
| 44-3-C221.08-0MCT<br>TAKE ACTIVE AIR DEFENSE MEASURES AGAINST HOSTILE AIRCRAFT | | | X | | X | |
| **Perform CSS and Sustainment** | | | | | | |
| 63-2-1015.08-00CT<br>PROVIDE PERSONNEL AND ADMINISTRATIVE SUPPORT | | | | | X | |
| 10-2-C320.08-00CT<br>PROVIDE UNIT SUPPLY SUPPORT | | | | | X | |
| 43-2-0002.08-0LCT<br>PERFORM UNIT-LEVEL MAINTENANCE OPERATIONS (UNIT WITHOUT MAINTENANCE ELEMENT) | | | | | X | |
| 08-2-R315.08-00CT<br>PERFORM FIELD SANITATION FUNCTIONS | | | | | X | |
| 08-2-R303.08-00CT<br>CONDUCT BATTLEFIELD STRESS REDUCTION AND PREVENTION PROCEDURES | X | X | X | X | X | X |
| 63-2-R326.08-00CT<br>PERFORM RISK MANAGEMENT PROCEDURES | X | X | X | X | X | X |
| 19-2-C702.08-0MCT<br>PROCESS ENEMY PRISONERS OF WAR | | | X | X | X | X |
| 19-2-C701.08-0MCT<br>PROCESS CAPTURED DOCUMENTS AND EQUIPMENT | | | X | X | X | X |
| 08-2-0003.08-00CT<br>TREAT CASUALTIES | X | | X | X | X | X |
| 08-2-C316.08-0MCT<br>TRANSPORT CASUALTIES | X | | X | X | X | X |
| 10-2-C318.08-0MCT<br>PERFORM MORTUARY AFFAIRS OPERATIONS | X | | X | X | X | X |
| 63-2-1028.08-00CT<br>PERFORM AREA DAMAGE CONTROL FUNCTIONS | | | X | | | |

Table B1. Continued

| ARTEP 8-429(MRI)-30-MTP<br>Collective Tasks | Conduct Strategic Deployment | Conduct Strategic Redeployment | Defend Assigned Area | Establish Unit Area Of Operations | Perform Combat Health Support Operations | Relocate Unit To A New Operating Site |
|---|---|---|---|---|---|---|
| 08-2-0700.08-429A<br>SUPERVISE PREVENTIVE MEDICINE OPERATIONS | | | | | **X** | |
| 08-2-0701.08-429A<br>PERFORM ENTOMOLOGICAL SURVEYS AND INSPECTIONS | | | | | **X** | |
| 08-2-0702.08-429A<br>PERFORM PEST CONTROL OPERATIONS | | | | | **X** | |
| 08-2-0703.08-429A<br>PERFORM SANITARY ENGINEERING OPERATIONS, SURVEYS, AND INSPECTIONS | | | | | **X** | |
| 08-2-0704.08-429A<br>PROVIDE EPIDEMIOLOGICAL SUPPORT | | | | | **X** | |
| **Exercise Command and Control** | | | | | | |
| 63-2-8027.08-00CT<br>PLAN UNIT MOBILIZATION IN A PEACETIME ENVIRONMENT | **X** | | | | | |
| 63-2-8028.08-00CT<br>PLAN UNIT DEPLOYMENT ACTIVITIES UPON RECEIPT OF A WARNING ORDER | **X** | | | | | |
| 63-2-1001.08-0SCT<br>PLAN UNIT MOVE (SERIAL) | **X** | | | | | **X** |
| 63-2-1007.08-0SCT<br>PLAN OCCUPATION OF NEW AREA OF OPERATIONS (SERIAL) | **X** | | | **X** | | |
| 63-2-1010.08-00CT<br>PLAN UNIT DEFENSE | **X** | | | **X** | | |
| 63-2-1014.08-0MCT<br>PLAN AREA DAMAGE CONTROL OPERATIONS | **X** | | | **X** | | |
| 63-2-1017.08-00CT<br>MAINTAIN COMMUNICATIONS | **X** | **X** | **X** | **X** | **X** | **X** |
| 63-2-8029.08-00CT<br>PLAN UNIT REDEPLOYMENT | | **X** | | | | |

Source: DA 2001a, 1-2 – 2-6.

# APPENDIX C

## MODIFIED TABLE OF ORGANIZATION AND EQUIPMENT
## MEDICAL DETACHMENT (PREVENTIVE MEDICINE)

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--- PREPARED FOR ---
MED DET, PM (SANITATION)

ICPs APPLIED FOR THIS MTOE:

| ICP# - PARA | SRCTO | NOMENCLATURE |
|---|---|---|
| C007 A 100 | 08498L000 | VINSON |
| C067 A 100 | 08498L000 | LT WT DIGITAL FAX |
| C091 A 100 | 08498L000 | MSE |
| C098 A 100 | 08498L000 | SINCGARS |
| C127 A 100 | 08498L000 | NAVSTAR PLGR |
| C139 A 100 | 08498L000 | SINCGARS A |
| C151 A 100 | 08498L000 | ACMES |
| G003 A 100 | 08498L000 | CHEM ALARM M8A1 |
| G008 A 100 | 08498L000 | RADIAC SET AN/PDR-75 |
| G010 A 100 | 08498L000 | RADIAC SET AN/VDR-2 |
| G011 A 100 | 08498L000 | PROTECTIVE MASK |
| G014 A 100 | 08498L000 | CAM |
| I002 A 100 | 08498L000 | NIGHT GOGGLES AN/PVS-5 |
| I011 A 100 | 08498L000 | RIFLE: 5.56MM M16A2 |
| I018 A 100 | 08498L000 | PISTOL 9MM |
| I022 A 100 | 08498L000 | NIGHT GOGGLES AN/PVS-7B |
| K012 A 100 | 08498L000 | GEN SET, DSL 3 KW AC |
| O026 A 100 | 08498L000 | GEN SET DED SKID 3KW |
| Q029 A 100 | 08498L000 | WATER QUAL ANALYSIS SET |
| S021 A 100 | 08498L000 | PESTICIDE DISP UNIT PORT |
| S024 A 100 | 08498L000 | SPRAY INSECT DISP UNIT |

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--- PREPARED FOR ---
MED DET, PM (SANITATION)

BOIPs APPLIED FOR THIS MTOE:

| BOIP - LIN | PARA | SRCTO | NOMENCLATURE |
|---|---|---|---|
| C007AA A S01373 | 100 | 08498L000 | SPEECH SECURITY EQUIPMENT: TSEC/KY-57 |
| C007AC A E98103 | 100 | 08498L000 | ELEC TRANSFER KEYING DEVICE ETKD: KYK-13/TSEC |
| C007AE A V98788 | 100 | 08498L000 | POWER SUPPLY VEHICLE: HYP-57/TSEC |
| C067AA A L67964 | 100 | 08498L000 | LIGHTWEIGHT DIGITAL FACSIMILE: AN/UXC-7 |
| C091CN A D60801 | 100 | 08498L000 | DIGITAL NON-SECURE VOICE TERMINAL W/DIGITAL DATA PORT: TA-1042 |
| C098A2 A J87848 | 100 | 08498L000 | INST KIT: MK-2499/VRC FOR TSEC/KY-57 WITH SINCGAR |
| C098AB A R44659 | 100 | 08498L000 | RADIO SET: AN/VRC-87 |
| C098AT A J31569 | 100 | 08498L000 | INST KIT: MK-2325/VRC FOR AN/VRC-87/88/90 IN HMMWV |
| C127AA A N95862 | 100 | 08498L000 | NAVIGATION SET SATILLITE SYSTEMS: AN/PSN-11 |
| C139CC A R67160 | 100 | 08498L000 | RADIO SET: AN/VRC-87A |
| C151AA A Z21128 | 100 | 08498L000 | DATA TRANSFER DEVICE: AN/CYZ-10 (C) |
| G003AB A A32355 | 100 | 08498L000 | ALARM CHEMICAL AGENT AUTOMATIC: PORTABLE MANPACK M8A1 |
| G008AA A R30925 | 100 | 08498L000 | RADIAC SET: AN/PDR-75 |
| G010AA A R20684 | 100 | 08498L000 | RADIAC SET: AN/VDR-2 |
| G011AA A M12418 | 100 | 08498L000 | MASK CHEMICAL BIOLOGICAL: M40 |
| G014AA A C05701 | 100 | 08498L000 | MONITOR CHEMICAL AGENT: |
| I002AA A N04456 | 100 | 08498L000 | NIGHT VISION GOGGLES: AN/PVS-5 |
| I011IA A R95035 | 100 | 08498L000 | RIFLE 5.56 MILLIMETER: M16A2 |
| I018AA A P98152 | 100 | 08498L000 | PISTOL 9MM AUTOMATIC: M9 |
| I022AA A N05482 | 100 | 08498L000 | NIGHT VISION GOGGLE: AN/PVS-7B |
| K012AA A G54041 | 100 | 08498L000 | GEN ST DSL ENG: SKID MTD 3KW 60 HZ AC 120/208V MEP-016B |
| O026AA A G18358 | 100 | 08498L000 | GEN SET: DED SKID MTD 3KW 60HZ |
| Q029AA A W47475 | 100 | 08498L000 | WATER QUALITY ANALYSIS SET: PURIFICATION |
| S021AA A S45531 | 100 | 08498L000 | SPRAYER AND DUSTER: PESTICIDE MANUALLY CARRIED |
| S024AA A S12148 | 100 | 08498L000 | SPRAYER: PESTICIDE MANUALLY CARRIED DC |

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--- PREPARED FOR ---
MED DET, PM (SANITATION)

UNITS AFFECTED:

| UIC | UNIT DESIGNATION | SUPERSESSION | DOCUMENT EDATE | CMD OF ASGMT | ITAADS CODE | MDEP |
|---|---|---|---|---|---|---|
| WBQJAA | 133D MEDICAL DET | 08498LE1010100 | 010216 | E580 | E5 | W980 |
| WHS7AA | 71ST MEDICAL DET | 08498LE1010100 | 010216 | E580 | E5 | W980 |

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DOCUMENT NUMBER 08498LE1017001 CONTAINS THE FOLLOWING ELEMENTS:

| PARA | MULTIPLIER | UNIT TITLE | SRC | UNIT DESIGNATOR |
|---|---|---|---|---|
| | | MED DET, PM (SANITATION) | 08498L00000100 | AA |
| 100 | 1 | MED DET, PM (SANITATION) | 08498L000 | B0 |

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--- PREPARED FOR ---
MED DET, PM (SANITATION)

--- PERSONNEL ALLOWANCE ---

| PARA | LINE | MULTI-PLIER | DESCRIPTION | GRADE | MOS | -ASI- 01 02 | LIC | BR | ID | SUB-UNIT REQ | SUB-UNIT AUTH | PAR-UNIT REQ | PAR-UNIT AUTH | -REMARK- 01 02 03 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100 | | 1 | MED DET, PM (SANITATION) | | | | 08498L000 | | | | | | | |
| 101 | | | PREVENTIVE MED DET | | | | | | | | | | | |
| 101 | 01 | | COMMANDER | O4 | 72D67 | | | MS | K | 1 | 1 | 1 | 1 | 11 |
| 101 | 02 | | ENTOMOLOGIST | O3 | 72B67 | | | MS | K | 1 | 1 | 1 | 1 | |
| 101 | 03 | | PREVENTIVE MED NCO | E7 | 91S4O | | | NC | I | 1 | 1 | 1 | 1 | |
| 101 | 04 | | PREVENTIVE MED NCO | E5 | 91S2O | | | NC | I | 1 | 1 | 1 | 1 | |
| 101 | 05 | | LT WH VEH MECHANIC | E4 | 63B1O | | | | I | 1 | 1 | 1 | 1 | 01 58 |
| 101 | 06 | | PREVENTIVE MED SP | E4 | 91S1O | | | | I | 3 | 3 | 3 | 3 | 04 |
| 101 | 07 | | PREVENTIVE MED SP | E3 | 91S1O | | | | I | 3 | 3 | 3 | 3 | 01 |
| | | | PARAGRAPH TOTALS: | | | | | | | 11 | 11 | 11 | 11 | |

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--- PERSONNEL REMARKS ---

01 ALSO LIGHT VEHICLE DRIVER

04 ALSO RADIO OPERATOR

11 ARMED WITH PISTOL/REVOLVER

58 AUGMENTS MAINTENANCE CAPABILITY OF SUPPORTING UNIT

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--- PREPARED FOR ---
MED DET, PM (SANITATION)

PERSONNEL RECAP FOR DOCUMENT NUMBER 08498LE1017001 BY IDENTITY:

| UNIT MULT | SUB-UNIT PARA 100 REQ (1) | SUB-UNIT PARA 100 AUTH | PARENT UNIT TOTAL REQ | PARENT UNIT TOTAL AUTH |
|---|---|---|---|---|
| OFF | 2 | 2 | 2 | 2 |
| WOF | 0 | 0 | 0 | 0 |
| ENL | 9 | 9 | 9 | 9 |
| TOTAL | 11 | 11 | 11 | 11 |

**********



--- PREPARED FOR ---
MED DET, PM (SANITATION)

PERSONNEL RECAP FOR DOCUMENT 08498LE1017001 BY GRADE, MOS, ASI & BRANCH:

| GR | MOS | ASI | BR | UNIT MULT (1) | SUB-UNIT PARA 100 REQ | SUB-UNIT PARA 100 AUTH | PARENT UNIT TOTAL REQ | PARENT UNIT TOTAL AUTH |
|---|---|---|---|---|---|---|---|---|
| OFFICERS | | | | | | | | |
| O4 | 72D67 | | MS | 1 | 1 | 1 | 1 | |
| O4 | TOTAL | | | 1 | 1 | 1 | 1 | |
| O3 | 72B67 | | MS | 1 | 1 | 1 | 1 | |
| O3 | TOTAL | | | 1 | 1 | 1 | 1 | |
| TOTAL OFFICERS | | | | 2 | 2 | 2 | 2 | |
| WARRANT OFFICERS | | | | | | | | |
| TOTAL WARRANTS | | | | 0 | 0 | 0 | 0 | |
| ENLISTED | | | | | | | | |
| E7 | 91S4O | | NC | 1 | 1 | 1 | 1 | |
| E7 | TOTAL | | | 1 | 1 | 1 | 1 | |
| E5 | 91S2O | | NC | 1 | 1 | 1 | 1 | |
| E5 | TOTAL | | | 1 | 1 | 1 | 1 | |
| E4 | 63B1O | | | 1 | 1 | 1 | 1 | |
| | 91S1O | | | 3 | 3 | 3 | 3 | |
| E4 | TOTAL | | | 4 | 4 | 4 | 4 | |
| E3 | 91S1O | | | 3 | 3 | 3 | 3 | |
| E3 | TOTAL | | | 3 | 3 | 3 | 3 | |
| TOTAL ENLISTED | | | | 9 | 9 | 9 | 9 | |
| TOTAL DOCUMENT | | | | 11 | 11 | 11 | 11 | |

--- PREPARED FOR ---
MED DET, PM (SANITATION)

--- EQUIPMENT ALLOWANCE ---

| PARA | LIN | ERC | MULTI-PLIER | DESCRIPTION | SUB-UNIT REQ | SUB-UNIT AUTH | PAR-UNIT REQ | PAR-UNIT AUTH | REMARK |
|---|---|---|---|---|---|---|---|---|---|
| 100 | | | 1 | MED DET, PM (SANITATION) 08498L000 | | | | | |
| 101 | | | | PREVENTIVE MED DET | | | | | |
| 101 | A32355 | B | | ALARM CHEMICAL AGENT AUTOMATIC: PORTABLE MANPACK M8A1 | 1 | 1 | 1 | 1 | |
| 101 | B48768 | B | | BOOK SET PREVENTIVE MEDICINE TEXT NO 1: | 1 | 1 | 1 | 1 | |
| 101 | C05701 | A | | MONITOR CHEMICAL AGENT: | 1 | 1 | 1 | 1 | |
| 101 | C68719 | B | | CABLE TELEPHONE: WD-1/TT DR-8 1/2 KM | 2 | 2 | 2 | 2 | |
| 101 | C69541 | B | | CABLE TELEPHONE: WF-16/U | 1 | 1 | 1 | 1 | |
| 101 | C89070 | C | | CAMOUFLAGE SCREEN SUPPORT SYSTEM: WOODLAND/DESERT | 18 | 18 | 18 | 18 | |
| 101 | C89145 | C | | CAMOUFLAGE SCREEN SYSTEM: WOODLAND LT WT RADAR SCAT W/O SPT | 18 | 18 | 18 | 18 | |
| 101 | D60801 | B | | DIGITAL NON-SECURE VOICE TERMINAL W/DIGITAL DATA PORT: TA-1 | 3 | 3 | 3 | 3 | |
| 101 | E00533 | B | | CHARGER RADIAC DETECTOR: PP-1578/PD | 1 | 1 | 1 | 1 | |
| 101 | E56611 | A | | MEDICAL EQUIPMENT SET MEDICAL LABORATORY: COMBAT INDIVIDUAL | 1 | 1 | 1 | 1 | |
| 101 | G18358 | A | | GEN SET: DED SKID MTD 3KW 60HZ | 1 | 1 | 1 | 1 | |
| 101 | H10793 | B | | ENTOMOLOGICAL COLLECTING KIT FIELD: | 3 | 3 | 3 | 3 | |
| 101 | J31569 | A | | INST KIT: MK-2325/VRC FOR AN/VRC-87/88/90 IN HMMWV | 3 | 3 | 3 | 3 | |
| 101 | L63994 | B | | LIGHT SET GENERAL ILLUMINATION: 25 OUTLET (ARMY) | 1 | 1 | 1 | 1 | |
| 101 | L67964 | B | | LIGHTWEIGHT DIGITAL FACSIMILE: AN/UXC-7 | 3 | 3 | 3 | 3 | |
| 101 | M12418 | A | | MASK CHEMICAL BIOLOGICAL: M40 | 11 | 11 | 11 | 11 | |
| 101 | M24993 | A | | MEDICAL EQUIPMENT SET EPIDEMIOLOGY SERVICE FIELD | 1 | 1 | 1 | 1 | |
| 101 | M28909 | A | | MEDICAL EQUIPMENT SET INDUSTRIAL HYGIENE SURVEY: FIELD | 1 | 1 | 1 | 1 | |
| 101 | N05482 | B | | NIGHT VISION GOGGLE: AN/PVS-7B | 3 | 3 | 3 | 3 | |

--- PREPARED FOR ---
MED DET, PM (SANITATION)

--- EQUIPMENT ALLOWANCE ---

| PARA | LIN | ERC | MULTI-PLIER | DESCRIPTION | SUB-UNIT REQ | SUB-UNIT AUTH | PAR-UNIT REQ | PAR-UNIT AUTH | REMARK |
|---|---|---|---|---|---|---|---|---|---|
| 101 | N95862 | B | | NAVIGATION SET SATILLITE SYSTEMS: AN/PSN-11 | 3 | 3 | 3 | 3 | |
| 101 | P98152 | B | | PISTOL 9MM AUTOMATIC: M9 | 1 | 1 | 1 | 1 | |
| 101 | Q20935 | B | | RADIACMETER: IM-93/UD | 3 | 3 | 3 | 3 | |
| 101 | R20684 | B | | RADIAC SET: AN/VDR-2 | 3 | 3 | 3 | 3 | |
| 101 | R30925 | B | | RADIAC SET: AN/PDR-75 | 1 | 1 | 1 | 1 | |
| 101 | R59160 | B | | REELING MACHINE CABLE HAND: RL-39 | 4 | 4 | 4 | 4 | |
| 101 | R64126 | B | | REFRIGERATOR SOLID STATE BIO: | 3 | 3 | 3 | 3 | |
| 101 | R67160 | A | | RADIO SET: AN/VRC-87A | 3 | 3 | 3 | 3 | |
| 101 | R95035 | B | | RIFLE 5.56 MILLIMETER: M16A2 | 10 | 10 | 10 | 10 | |
| 101 | S12148 | A | | SPRAYER: PESTICIDE MANUALLY CARRIED DC | 3 | 3 | 3 | 3 | |
| 101 | S45531 | B | | SPRAYER AND DUSTER: PESTICIDE MANUALLY CARRIED | 3 | 3 | 3 | 3 | |
| 101 | T31872 | B | | TELEPHONE WIRE WITH REEL: MX-10891/G | 3 | 3 | 3 | 3 | |
| 101 | T61494 | A | | TRUCK UTILITY: CARGO/TROOP CARRIER 1-1/4 TON 4X4 W/E (HMMWV | 3 | 3 | 3 | 3 | |
| 101 | V31211 | B | | TELEPHONE SET: TA-312/PT | 1 | 1 | 1 | 1 | |
| 101 | W33004 | B | | TOOL KIT GENERAL MECHANICS: AUTOMOTIVE | 1 | 1 | 1 | 1 | |
| 101 | W34648 | B | | TOOL KIT CARPENTERS: ENGINEER SQUAD W/CHEST | 1 | 1 | 1 | 1 | |
| 101 | W47475 | A | | WATER QUALITY ANALYSIS SET: PURIFICATION | 3 | 3 | 3 | 3 | |
| 101 | W95537 | B | | TRAILER CARGO: 3/4 TON 2 WHEEL W/E | 3 | 3 | 3 | 3 | |
| 101 | Y36849 | A | | MEDICAL EQUIPMENT SET WATER QUAL ANALYSIS PREVENTIVE MEDICI | 3 | 3 | 3 | 3 | |
| 101 | Y37130 | B | | WATER TESTING KIT BACTERIOLOGICAL: | 3 | 3 | 3 | 3 | |
| 101 | Z21128 | A | | DATA TRANSFER DEVICE: AN/CYZ-10 (C) | 3 | 3 | 3 | 3 | |

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--- EQUIPMENT REMARKS ---

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--- PREPARED FOR ---
MED DET, PM (SANITATION)

EQUIPMENT RECAP FOR DOCUMENT 08498LE1017001 BY LIN & ERC:

| LIN | ERC | DESCRIPTION | UNIT MULT | SUB-UNIT PARA 100 REQ | SUB-UNIT PARA 100 AUTH (1) | PARENT UNIT TOTAL REQ | PARENT UNIT TOTAL AUTH |
|---|---|---|---|---|---|---|---|
| A32355 | B | ALARM CHEMICAL AGE | | 1 | 1 | 1 | 1 |
| B48768 | B | BOOK SET PREVENTIV | | 1 | 1 | 1 | 1 |
| C05701 | A | MONITOR CHEMICAL A | | 1 | 1 | 1 | 1 |
| C68719 | B | CABLE TELEPHONE: W | | 2 | 2 | 2 | 2 |
| C69541 | B | CABLE TELEPHONE: W | | 1 | 1 | 1 | 1 |
| C89070 | C | CAMOUFLAGE SCREEN | | 18 | 18 | 18 | 18 |
| C89145 | C | CAMOUFLAGE SCREEN | | 18 | 18 | 18 | 18 |
| D60801 | B | DIGITAL NON-SECURE | | 3 | 3 | 3 | 3 |
| E00533 | B | CHARGER RADIAC DET | | 1 | 1 | 1 | 1 |
| E56611 | A | MEDICAL EQUIPMENT | | 1 | 1 | 1 | 1 |
| G18358 | A | GEN SET: DED SKID | | 1 | 1 | 1 | 1 |
| H10793 | B | ENTOMOLOGICAL COLL | | 3 | 3 | 3 | 3 |
| J31569 | A | INST KIT: MK-2325/ | | 3 | 3 | 3 | 3 |
| L63994 | B | LIGHT SET GENERAL | | 1 | 1 | 1 | 1 |
| L67964 | B | LIGHTWEIGHT DIGITA | | 3 | 3 | 3 | 3 |
| M12418 | A | MASK CHEMICAL BIOL | | 11 | 11 | 11 | 11 |
| M24993 | A | MEDICAL EQUIPMENT | | 1 | 1 | 1 | 1 |
| M28909 | A | MEDICAL EQUIPMENT | | 1 | 1 | 1 | 1 |
| N05482 | B | NIGHT VISION GOGGL | | 3 | 3 | 3 | 3 |
| N95862 | B | NAVIGATION SET SAT | | 3 | 3 | 3 | 3 |
| P98152 | B | PISTOL 9MM AUTOMAT | | 1 | 1 | 1 | 1 |
| Q20935 | B | RADIACMETER: IM-93 | | 3 | 3 | 3 | 3 |
| R20684 | B | RADIAC SET: AN/VDR | | 3 | 3 | 3 | 3 |
| R30925 | B | RADIAC SET: AN/PDR | | 1 | 1 | 1 | 1 |
| R59160 | B | REELING MACHINE CA | | 4 | 4 | 4 | 4 |
| R64126 | B | REFRIGERATOR SOLID | | 3 | 3 | 3 | 3 |
| R67160 | A | RADIO SET: AN/VRC- | | 3 | 3 | 3 | 3 |
| R95035 | B | RIFLE 5.56 MILLIME | | 10 | 10 | 10 | 10 |
| S12148 | A | SPRAYER: PESTICIDE | | 3 | 3 | 3 | 3 |
| S45531 | B | SPRAYER AND DUSTER | | 3 | 3 | 3 | 3 |
| T31872 | B | TELEPHONE WIRE WIT | | 3 | 3 | 3 | 3 |
| T61494 | A | TRUCK UTILITY: CAR | | 3 | 3 | 3 | 3 |
| V31211 | B | TELEPHONE SET: TA- | | 1 | 1 | 1 | 1 |
| W33004 | B | TOOL KIT GENERAL M | | 1 | 1 | 1 | 1 |
| W34648 | B | TOOL KIT CARPENTER | | 1 | 1 | 1 | 1 |
| W47475 | A | WATER QUALITY ANAL | | 3 | 3 | 3 | 3 |
| W95537 | B | TRAILER CARGO: 3/4 | | 3 | 3 | 3 | 3 |
| Y36849 | A | MEDICAL EQUIPMENT | | 3 | 3 | 3 | 3 |
| Y37130 | B | WATER TESTING KIT | | 3 | 3 | 3 | 3 |

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--- PREPARED FOR ---
MED DET, PM (SANITATION)

EQUIPMENT RECAP FOR DOCUMENT 08498LE1017001 BY LIN & ERC:

| LIN | ERC | DESCRIPTION | UNIT MULT | SUB-UNIT PARA 100 REQ | SUB-UNIT PARA 100 AUTH (1) | PARENT UNIT TOTAL REQ | PARENT UNIT TOTAL AUTH |
|---|---|---|---|---|---|---|---|
| Z21128 | A | DATA TRANSFER DEVI | | 3 | 3 | 3 | 3 |

--- PREPARED FOR ---
MED DET, PM (SANITATION)

--- MTOE ORGANIZATION CHANGES ---

001 AUTHORIZED LEVEL OF ORGANIZATION(ALO): ALO-1
002 CTU: UNIT BUILT TO CTU 9804
003 UNIT MISSION: TO PROVIDE PREVENTIVE MEDICINE SUPPORT AND
004 CONSULTATION IN THE AREAS OF DISEASE AND NON-BATTLE INJURY
005 (DNBI) PREVENTION, FIELD SANITATION, ENTOMOLOGY, SANITARY
006 ENGINEERING AND EPIDEMOLOGY TO MINIMIZE THE EFFECTS OF
007 ENVIRONMENTAL INJURIES, ENTERIC DISEASES, VECTOR-BORNE
008 DISEASES AND OTHER HEALTH THREATS ON DEPLOYED FORCES IN THE
009 THEATER.
010 OTHER CHANGES: ORI AND/OR OPMS XXI IS NOT APPLICABLE TO
011 THIS SRC.
012 ALL REMARKS IN BASE TOE APPLY. QUESTIONS CONCERNING THIS
013 MTOE SHOULD BE DIRECTED TO THE LOCAL FORCE DEVELOPMENT
14 OFFICE.OULD BE DIRECTED TO THE LOCAL FORCE DEVELOPMENT

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JANUARY 4, 1999 13:28 HRS ** UNCLASSIFIED ** PAGE 12
DOCUMENT COMPARE - PERSONNEL - RECAP - GRADE/MOS

PROPOSED New Document 08498L010170 PROPOSED Old Document 08498L010001

GR MOS-- NEW OLD DELTA

********** No Records **********

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JANUARY 4, 1999 13:28 HRS ** UNCLASSIFIED ** PAGE 13
DOCUMENT COMPARE - PERSONNEL - RECAP - DELETED GRADE/MOS

PROPOSED New Document 08498L010170 PROPOSED Old Document 08498L010001

GR MOS-- NEW OLD DELTA

********** No Records **********

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JANUARY 4, 1999 13:28 HRS ** UNCLASSIFIED ** PAGE 14
DOCUMENT COMPARE - PERSONNEL - DETAIL - GRADE/MOS

PROPOSED New Document 08498L010170 PROPOSED Old Document 08498L010001

DOC PARA LN- GR MOS-- POSITION-TITLE------- AUTH REQ

********** No Records **********

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JANUARY 4, 1999 13:28 HRS ** UNCLASSIFIED ** PAGE 15
DOCUMENT COMPARE - EQUIP - RECAP - W/DELTA

PROPOSED New Document 08498L010170 PROPOSED Old Document 08498L010001

| LIN--- | ERC | NOMENCLATURE---------- | NEW | OLD | DLTA | NOT-IN |
|---|---|---|---|---|---|---|
| D60801 | B | DIGITAL NON-SECURE VOICE TERMINAL W/DIGI | 3 | 0 | 3 | |
| J31569 | A | INST KIT: MK-2325/VRC FOR AN/VRC-87/88/9 | 3 | 4 | -1 | |
| N05482 | B | NIGHT VISION GOGGLE: AN/PVS-7B | 3 | 4 | -1 | |
| N95862 | B | NAVIGATION SET SATILLITE SYSTEMS: AN/PSN | 3 | 4 | -1 | |
| R67160 | A | RADIO SET: AN/VRC-87A | 3 | 4 | -1 | |
| T45408 | B | TELEPHONE DIGITAL NON-SECURE VOICE: TA-1 | | | | 3 |
| T61494 | A | TRUCK UTILITY: CARGO/TROOP CARRIER 1-1/4 | 3 | 4 | -1 | |
| W95537 | B | TRAILER CARGO: 3/4 TON 2 WHEEL W/E | 3 | 4 | -1 | |
| Z21128 | A | DATA TRANSFER DEVICE: AN/CYZ-10 (C) | 3 | 4 | -1 | |

JANUARY 4, 1999 13:28 HRS ** UNCLASSIFIED ** PAGE 16
DOCUMENT COMPARE - EQUIP - RECAP - DELETED LINS

PROPOSED New Document 08498L010170 PROPOSED Old Document 08498L010001

| LIN--- | ERC | NOMENCLATURE---------- | AUTH |
|---|---|---|---|
| T45408 | B | TELEPHONE DIGITAL NON-SECURE VOICE: TA-1 | 3 |

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JANUARY 4, 1999 13:28 HRS ** UNCLASSIFIED ** PAGE 17
DOCUMENT COMPARE - EQUIP - DETAIL - PARA/LIN

PROPOSED New Document 08498L010170 PROPOSED Old Document 08498L010001

| DOC | PARA | LIN--- | ERC | NOMENCLATURE---------- | AUTH | REQ |
|---|---|---|---|---|---|---|
| NEW | 101 | D60801 | B | DIGITAL NON-SECURE VOICE TERMINAL W/DIGI | 3 | 3 |
| OLD | 101 | D60801 | B | ********** | *** | *** |
| NEW | 101 | J31569 | A | INST KIT: MK-2325/VRC FOR AN/VRC-87/88/9 | 3 | 3 |
| OLD | 101 | J31569 | A | INST KIT: MK-2325/VRC FOR AN/VRC-87/88/9 | 4 | 4 |
| NEW | 101 | N05482 | B | NIGHT VISION GOGGLE: AN/PVS-7B | 3 | 3 |
| OLD | 101 | N05482 | B | NIGHT VISION GOGGLE: AN/PVS-7B | 4 | 4 |
| NEW | 101 | N95862 | B | NAVIGATION SET SATILLITE SYSTEMS: AN/PSN | 3 | 3 |
| OLD | 101 | N95862 | B | NAVIGATION SET SATILLITE SYSTEMS: AN/PSN | 4 | 4 |
| NEW | 101 | R67160 | A | RADIO SET: AN/VRC-87A | 3 | 3 |
| OLD | 101 | R67160 | A | RADIO SET: AN/VRC-87A | 4 | 4 |
| NEW | 101 | T61494 | A | TRUCK UTILITY: CARGO/TROOP CARRIER 1-1/4 | 3 | 3 |
| OLD | 101 | T61494 | A | TRUCK UTILITY: CARGO/TROOP CARRIER 1-1/4 | 4 | 4 |
| NEW | 101 | W95537 | B | TRAILER CARGO: 3/4 TON 2 WHEEL W/E | 3 | 3 |
| OLD | 101 | W95537 | B | TRAILER CARGO: 3/4 TON 2 WHEEL W/E | 4 | 4 |
| NEW | 101 | Z21128 | A | DATA TRANSFER DEVICE: AN/CYZ-10 (C) | 3 | 3 |
| OLD | 101 | Z21128 | A | DATA TRANSFER DEVICE: AN/CYZ-10 (C) | 4 | 4 |
| NEW | 101 | T45408 | B | ********** | *** | *** |
| OLD | 101 | T45408 | B | TELEPHONE DIGITAL NON-SECURE VOICE: TA-1 | 3 | 3 |

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** REPORT END **

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Source: DA 2000d

# APPENDIX D

## ARMY MEDICAL DEPARTMENT LESSONS LEARNED

Table D1. Army Medical Department Lessons Learned

| AMEDD Tracking Number* | DTLOMS Domain | Title | Finding |
|---|---|---|---|
| 4882 | Doctrine | Preventive Medicine as a member of the site selection team | PM must be part of the site selection team since they possess specific training to help identify environmental health threats |
| 4877 | Doctrine | Need for risk assessment prior to troop arrival | Develop and incorporate the appropriate support (medical, environmental, real estate, maintenance, etc) package for recon assessment prior to sending soldiers into a high-risk situation. |
| 4643 | Leader Development | Preventive Medicine Requirements | Emphasize preventive medicine in all service school leader courses of instruction |
| 4384 | Doctrine Organization | Lack of Uniformity in Preventive Medicine Policy | Preventive medicine should make their recommendations on requirements for deployments have a higher visibility in the Department of Defense |
| 3820 | Doctrine Organization | Preventive Medicine Intelligence | Provide a single source of information from OTSG on preventive medicine requirements |
| 3260 | Materiel | Laboratory Capability in the Field | Upgrade water and air testing capability at preventive medicine unit level by getting modern portable kits of water testing and air sampling |
| 3150 | Doctrine Organization | Routing of NBC Samples for testing & reporting of results | Establish and disseminate doctrine which establishes procedures and responsibilities for collection, testing and reporting of NBC specimens/data |

Table D1. Continued

| AMEDD Tracking Number* | DTLOMS Domain | Title | Finding |
|---|---|---|---|
| 3126 | Materiel | PM Supplies Inadequate | Depending on the mission and area of the world, new or non-standard items need to be available and force issued to the units |
| 3125 | Leader Development | Marketing (PM in CGSOC) | Preventive medicine instruction should be part of the CGSC core curriculum |
| 3086 | Materiel | Environmental sampling equipment not adequate | Water sampling submission kits are being developed to provide sampling containers for collection and submission of water samples to supporting laboratories |
| 3085 | Materiel | Detect a wider range of chemical contamination for terrorist attack | Conduct a market investigation to identify technologies that would provide capability to preventive medicine field units |
| 3082 | Materiel | Capability to detect chemical agents in water supplies | Current chemical agent test kit does not have the sensitivity required to measure new field standards for mustard and cyanide |
| 2913 | Materiel | Requisite equipment not on hand for PREV MED functions | The requisite equipment was not on hand in the TO&E units to support some of the preventive medicine functions |
| 2740 | Doctrine Organization | Need for Doctrine on Collection of Routine Data | Creation of a plan for collecting standard epidemiological DNBI data during both peacetime and contingency operations |
| 2740 | Leader Development | Need for Doctrine on Collection of Routine Data | Training medical personnel and units on data collection and its purpose |

Note *: "AMEDD Tracking Number" is derived from the AMEDD Center for Lessons Learned database, which accessed from http://lessonslearned.amedd.army.mil.

APPENDIX E

PREVENTIVE MEDICINE SPECIALIST SOLDIER TASKS

Table E1. Preventive Medicine Specialist Soldier Tasks

| Task Number | Subject Area | Task | Skill Level |
|---|---|---|---|
| 081-850-0110 | Food | Inspect a Food Service Facility | 1 |
| 081-850-0112 | Food | Inspect a Field Food Service Facility | 1 |
| 081-850-0113 | Food | Collect an Ice Sample for Bacteriological Analysis | 1 |
| 081-850-0121 | Water | Perform a pH test on water | 1 |
| 081-850-0122 | Water | Perform a Chlorine Residual Test on Treated Water | 1 |
| 081-850-0123 | Water | Collect a Treated Water Sample for Bacteriological Analysis | 1 |
| 081-850-0124 | Water | Perform Bacteriological Analysis on Water Samples | 1 |
| 081-850-0125 | Water | Perform Chemical Analysis on a Water Sample Utilizing the Water Quality Analysis Set | 1 |
| 081-850-0126 | Water | Perform Chemical Agents Test on Water with an M272 Kit | 1 |
| 081-850-0127 | Water | Inspect a Field Unit's Water Supply | 1 |
| 081-850-0128 | Water | Perform an Inspection for Cross Connections | 1 |
| 081-850-0131 | Recreational Water | Collect Bacteriological Samples from Swimming Pools | 1 |
| 081-850-0132 | Recreational Water | Inspect a Swimming Pool | 1 |
| 081-850-0133 | Recreational Water | Collect a Bacteriological Sample from a Natural Bathing Area/Waterway | 1 |
| 081-850-0134 | Recreational Water | Inspect a Natural Bathing Area | 1 |
| 081-850-0141 | Waste | Survey Refuse Disposal Operations | 1 |
| 081-850-0142 | Waste | Inspect Field Waste Disposal Facilities | 1 |
| 081-850-0143 | Waste | Inspect a Sanitary Landfill | 1 |
| 081-850-0144 | Waste | Collect a Wastewater Sample for Bacteriological Analysis | 1 |
| 081-850-0151 | Entomology Control | Collect Rodents | 1 |
| 081-850-0152 | Entomology Control | Collect Arthropods | 1 |

Table E1. Continued

| Task Number | Subject Area | Task | Skill Level |
|---|---|---|---|
| 081-850-0153 | Entomology Control | Process Entomological Specimens for Storage | 1 |
| 081-850-0154 | Entomology Control | Process Entomological Specimens for Shipment | 1 |
| 081-850-0155 | Entomology Control | Rear Entomological Specimens | 1 |
| 081-850-0156 | Entomology Control | Conduct Pest Control Operations | 1 |
| 081-850-0161 | Environmental Quality | Measure Sound Level | 1 |
| 081-850-0162 | Environmental Quality | Compute and Interpret a WBGT Index | 1 |
| 081-850-0163 | Environmental Quality | Determine Wind Chill Factor | 1 |
| 081-850-0164 | Environmental Quality | Inspect a Barber / Beauty Shop | 1 |
| 081-850-0165 | Environmental Quality | Inspect Troop Housing | 1 |
| 081-850-0166 | Environmental Quality | Inspect Field Hygiene Facilities | 1 |
| 081-850-0167 | Environmental Quality | Evaluate a Field Sanitation Team | 1 |
| 081-850-0271 | Sanitation | Inspect Ice Manufacturing, Storage, and Distribution Facilities | 2 |
| 081-850-0272 | Sanitation | Inspect a Field Water Supply Point | 2 |
| 081-850-0273 | Sanitation | Perform a Pollution Survey of a Stream | 2 |
| 081-850-0274 | Sanitation | Inspect a Medical Treatment Facility's Infectious Waste Disposal Procedures | 2 |
| 081-850-0281 | Entomology | Identify an Arthropod | 2 |
| 081-850-0282 | Entomology | Identify a Rodent | 2 |
| 081-850-0283 | Entomology | Identify a Non-Rodent Vertebrate Pest | 2 |
| 081-850-0284 | Entomology | Perform an Entomological Survey | 2 |
| 081-850-0291 | Industrial Hygiene | Conduct a Limited Ventilation Survey | 2 |
| 081-850-0292 | Industrial Hygiene | Conduct an Illumination Survey | 2 |
| 081-850-0293 | Industrial Hygiene | Perform a Noise Hazard Survey | 2 |
| 081-850-0294 | Industrial Hygiene | Measure or Collect an Airborne Toxic Sample | 2 |

Table E1. Continued

| Task Number | Subject Area | Task | Skill Level |
|---|---|---|---|
| 081-850-0295 | Industrial Hygiene | Visually Inspect an Ionizing or Non-ionizing Radiation Source | 2 |
| 081-850-0202 | Epidemiology | Conduct a Foodborne Disease Illness Investigation | 2 |
| 081-850-0203 | Epidemiology | Conduct a Malaria Investigation | 2 |
| 081-850-0204 | Epidemiology | Conduct a Hepatitis Investigation | 2 |
| 081-850-0205 | Epidemiology | Conduct a Venereal Disease Investigation | 2 |
| 081-850-0311 | Entomology Planning | Plan and Supervise an Entomological Field Survey | 3 |
| 081-850-0312 | Entomology Planning | Plan and Supervise a Pest Control Program | 3 |
| 081-850-0321 | Preventive Medicine Procedures | Select a Field Water Supply Source | 3 |
| 081-850-0322 | Preventive Medicine Procedures | Conduct a Zoonotic Disease Epidemic Investigation | 3 |
| 081-850-0323 | Preventive Medicine Procedures | Conduct A Survey For Airborne Toxic Substances | 3 |

Source: DA 1997b, i – iii.

# GLOSSARY

Echelons of Preventive Medicine Support:

Echelon I--provided by unit field sanitation teams. Primary responsibility lies with the small unit leader to ensure individual soldiers are protected against the medical threat and individual preventive medicine measures are employed (DA 1994, 11-3 – 11-5). Field manual 21-10, *Field Hygiene and Sanitation*, provides information basic personal protective measures to the health of the individual soldier. Basic duties and responsibilities of the unit field sanitation team can be found in FM 21-10-1, *Unit Field Sanitation Team*.

Echelon II--provided by preventive medicine sections of divisions, separate brigades, and armored cavalry regiments and are responsible for the following:

1. Assessing the medical threat and determining preventive medicine measures.
2. Advising commanders and staffs of preventive medicine requirements.
3. Coordinating with logistical elements for required support of preventive medicine materials.
4. Training, monitoring, and providing technical assistance to unit field sanitation teams.
5. Monitoring the training of all individuals in personal preventive medicine measures.
6. Conducting surveys, inspections, and control activities.
7. Conducting and coordinating the medical surveillance for selected diseases of preventive medicine importance; compiling and reporting data to higher headquarters; and investigating significant medical occurrences.

Note: Although the composition of these preventive medicine elements are specified by a table of organization and equipment, they may be tailor-made to provide selected preventive medicine expertise to investigate and provide solutions to significant preventive medicine problems/issues by augmenting or changing the officer expertise available. For example, for disease outbreak investigations, community health nurses, or additional preventive medicine officers may be added at any level to assist in the investigation. Likewise, nuclear science officers may be added to investigate radiation problems such as nuclear contamination of food/water supplies. (DA 1994, 11-5)

Echelon III--provided by the MED DET (PM) and the Area Support Medical Battalion Preventive Medicine Section (DA 1994, 11-5 – 11-6). Echelon III units augment and support echelons I and II preventive medicine units and provide unique preventive medicine capabilities with the MED DET (PM), see Appendix A.

Echelon IV--provided by the Area Medical Laboratory Preventive Medicine Support, which provides support in the areas of epidemiological (infectious) disease investigations, entomological laboratory analysis, radiation protection and analysis, sanitary engineering, and industrial hygiene (DA 1994, 11-5 and 11-6). The USACHPPM regional support commands also provide echelon IV preventive medicine support through laboratory support, consultative services, and personnel and equipment augmentation.

Echelon V--provided by USACHPPM, which serves as the Army's central repository and proponent for information and policy regarding medical surveillance. The USACHPPM augments echelon III and IV preventive medicine support and

serves as a consulting agency for all Army field preventive medicine units, to include the MED DET (PM), on issues related to traditional preventive medicine missions as well as on medical surveillance.

Medical Detachment (Preventive Medicine) [MED DET (PM)]. The MED DET (PM) is a corps asset that provides Echelon III preventive medicine support in a theater of operations. There are two types of MED DET (PM) in the Army: the ENOT and SANI. These units have similar capabilities, functions, and missions. The major difference between the two units is the area and aerial spray capabilities of the MED DET (PM) (ENTO). Under the MRI, the organization and equipment of these two units will be transformed into a single, multi-purpose unit called the Preventive Medicine Detachment (DA 2000b, p 4-1 and Appendix B)

Medical Surveillance.

> Medical Surveillance is the regular or repeated collection, analysis, and dissemination of uniform health information for monitoring the health of a population, and intervening in a timely manner when necessary. It is defined by the Centers for Disease Control and Prevention as the ongoing, systematic collection, analysis, and interpretation of health data essential to the planning, implementation, and evaluation of public health practice, closely integrated with the timely dissemination of these data to those who need to know. The final link of a military medical surveillance system is the application of these data to military training, plans and operations to prepare and implement early intervention and control strategies. A surveillance system includes a functional capacity for data collection, analysis and dissemination of information linked to military preventive medicine support of operational commanders. (DOD 1997, 2)

The DTLOMS Domains:

Doctrine

> Doctrine provides a holistic basis for the Army to incorporate new idea, technologies, and organizational designs. It is the philosophical under pinning for all DTLOMS products. Doctrine serves as a catalyst for change, explaining that change in language soldiers and leaders can understand. (CALL 1999, 20)

Training

> Training molds the Army into a force that is capable of decisive victory. It ensures that soldiers are prepared to fight and win. The Army has one standard. That standard is tough, realistic, battle-focused training that prepares soldiers and units for a variety of missions. (CALL 1999, 20)

Leader Development

> Leader development is the process of developing or promoting the growth of confident, competent military leaders who understand and are able to exploit the full potential of present and future doctrine, organizations, technology, and equipment. Leadership is the product of the leader development process. Effective leadership transforms human potential into effective performance. (CALL 1999, 21)

Organizations

> Organizational design encompasses the allocation of personnel and equipment to units to perform specific types of missions. As the Army becomes smaller but is expected to accomplish a wider variety of complex missions, unit organizations and staffs will be tailored to the mission. These tailored organizations will face a variety of environmental challenges during all operations. (CALL 1999, 21)

Materiel

> Materiel requirements encompass the combat development function. The [AMEDD's] combat development staffs represent the "users," i.e., the field Army, in providing a statement of need or "requirement," to the Department of the Army and the Department of Defense decision-makers and to material developers in the Army Materiel Command. The Operational Requirements Document (ORD) drives the development of the Army's new equipment. (CALL 1999, 21)

Soldier Systems

> Quality soldiers, trained and led by competent and caring leaders, will remain the keys to success in Army operations. Soldiers of the 21$^{ST}$ Century will face a variety of environmental challenges when preparing for and executing missions. (CALL 1999, 21)

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|---|---|---|
| | 31 May 2002 | Master's Thesis 01 Aug 01 – 31 May 02 |

4. TITLE AND SUBTITLE
Integrating Medical Surveillance into the Mission of the Medical Detachment (Preventive Medicine)

5. FUNDING NUMBERS

6. AUTHOR(S)
MAJ Timothy G. Bosetti, U.S.Army

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
U.S. Army Command and General Staff College
ATTN: ATZL-SWD-GD
1 Reynolds Ave.
Ft. Leavenworth, KS 66027-1352

8. PERFORMING ORGANIATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSORING/MONITORING

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for public release; distribution is unlimited.

12b. DISTRIBUTION CODE

A

13. ABSTRACT (*Maximum 200 words*)
Over the last decade, the United States Army has played an increased role in stability and support operations in which the Medical Detachment (Preventive Medicine) [MED DET (PM)] has taken on a new mission, medical surveillance.

This research studies the impact of taking on the new mission and identifies the changes needed to integrate medical surveillance into the mission of the MED DET (PM) based upon the doctrine, training, leader development, organizational design, material, and soldier systems (DTLOMS) model. In order to address primary question, this research analyzes medical surveillance conducted by the MED DET (PM) in the Balkan theater of operations.

The findings suggest that medical surveillance is not fully integrated into the mission of the MED DET (PM) and changes are required in all DTLOMS domains. The investigator makes the following recommendations: defining medical surveillance and its requirements (Doctrine), defining the training requirements for medical surveillance in training manuals (Training), providing training on medical surveillance in officer and non-commissioned officer development programs and schools (Leader Development), defining the technical chains of communication in the organizational structure (Organization), providing equipment specifically designed to conduct medical surveillance (Materiel), and including medical surveillance into military occupational specialty proficiency tasks (Soldier Systems).

14. SUBJECT TERMS
Medical Surveillance, Deployment Environmental Surveillance, Preventive Medicine, Medical Detachment (Preventive Medicine), DTLOMS, Lessons Learned

15. NUMBER OF PAGES
118

16. PRICE CODE

| 17. SECURITY CLASSIFICATION OF REPORT | 18. SECURITY CLASSIFICATION OF THIS PAGE | 19. SECURITY CLASSIFICATION OF ABSTRACT | 20. LIMITATION OF ABSTRACT |
|---|---|---|---|
| UNCLASSIFIED | UNCLASSIFIED | UNCLASSIFIED | UL |